

IFP

An MDM PUBLICATION
Issue 37 – February 2009

www.mdmpublishing.com

INTERNATIONAL FIRE PROTECTION



THE GLOBAL VOICE FOR PASSIVE & ACTIVE FIRE PROTECTION

NEW - FIRETUF POWERPLUS

Enhanced power cable performance to meet BS 7346-6 and BS 7846.

BS 5839-1: 2002

Firetuf is approved to the highest standards, providing superior flame retardance and circuit integrity.

NON MELT AND DRIP

Firetuf products will not propagate and cause secondary fires.

EASY STRIP

Firetuf provides the fastest ever sheath removal, allowing reduced termination times.

ZERO HALOGEN LOW SMOKE

Our OHLS cables are manufactured to deliver optimum performance across a range of applications.

FUTURE PROOF

Concerned about new fire safety legislation? Relax, the Firetuf range is the highest standard cable available today.

AS FIRETUF AS THEY COME

Firetuf® from Draka is the ultimate circuit integrity cable. Manufactured and approved to the highest standards, Firetuf delivers unbeatable benefits to specifiers and installers of fire engineering systems. And with our brand new Firetuf Powerplus range of power cables, delivering enhanced performance to meet BS 7346-6 and BS 7846, you can trust Draka to provide the complete solution to all your specialist cable needs. To find out more call 01332 345431 or visit our website www.drakauk.com



Draka

The world's most trusted cable brand

Draka UK Limited, P.O. Box 6500, Alfreton Road, Derby, DE21 4ZH, UK
Tel: +44 (0)1332 345431 Fax: +44 (0)1332 331237 email: firetuf@draka.com www.drakauk.com

February 2009 Issue 37



Front cover Hotfoam system in action, courtesy of Firemain Engineering

Publishers

Mark Seton & David Staddon

Editorial Contributors

Sarah Brewer, Peter Massingberd-Mundy, Matthias Ecke, Brendan MacGrath, Bill Parlour, John Allen, Nick Grant, Paul Bryant, Mark Froggatt, David Owen, Steve Robinson, Charlotte Philo, Alex Playfair, Bobby Patrick

IFP is published quarterly by:
MDM Publishing Ltd
The Abbey Manor Business Centre,
The Abbey, Preston Road,
Yeovil, Somerset BA20 2EN
Tel: +44 (0) 1935 426 428
Fax: +44 (0) 1935 426 926
Email: dave.staddon@ifpmag.com
website: www.ifpmag.com
©All rights reserved

Annual Subscription
UK – £35.00 Europe – €60
Overseas – US\$70.00
ISSN – 1468-3873

DISCLAIMER:

The views and opinions expressed in INTERNATIONAL FIRE PROTECTION are not necessarily those of MDM Publishing Ltd. The magazine and publishers are in no way responsible or legally liable for any errors or anomalies made within the editorial by our authors. All articles are protected by copyright and written permission must be sought from the publishers for reprinting or any form of duplication of any of the magazines content. Any queries should be addressed in writing to the publishers.

Reprints of articles are available on request. Prices on application to the Publishers.

Page design by Dorchester
Typesetting Group Ltd

Printed in Singapore

Contents



15-21

5-13 News &
Product Profiles

15-21 Survivability
of Fire Alarm Systems

23-24 Raising The
Alarm On Fire Detection
Myths

27-29 Protecting
Warehouses - One
Sprinkler Size Fits All?



23-24

31-33 Firetrace®
Chosen To Protect
Delhi's New Mass
Transit System

34-35 Filling The
Fire Safety Toolbox?

37-40 Project
Experience and New
Codes Validate Grease
Duct Wraps and Create
Emerging Opportunities



31-33

42-44 Cleared For
Takeoff

47-51 Pump House
Packages

52-54 Safety By
Detection

57-60 Covered in
Foam - an overview of
foam systems



42-44

62-64 Rebirth of
water mist technology

66-68 Cutting Fire-
rated Cable Installation
Costs

69-71 The Sound Of
The 21st Century

72 Advertisers'
Index



47-51



52-54



62-64



69-71



MDM Pu
WORLDWIDE

www.mdm pu

Introducing our

INCORPORATING

ifpmag.com

apfmag.com

iffmag.com

And much,

THERE IS NO

MDM Publishing Ltd, The Abbey Manor Business Centre,

Tel: +44 (0) 1935 426 428

www.mdmpublishing.com

blishing Ltd

MEDIA

blishing.com

Hi-Tech Portal Site

FEATURING

VIRTUAL ELECTRONIC MAGAZINES

LIVE REAL PAGE TURNING SOFTWARE

FULL PDF FILE DOWNLOADS

LIVE LINKS

FULL VIRTUAL ARCHIVE OF BACK ISSUES

much more ...

COMPARISON

The Abbey, Preston Road, Yeovil, Somerset BA20 2EN, UK

Fax: +44 (0) 1935 426 926

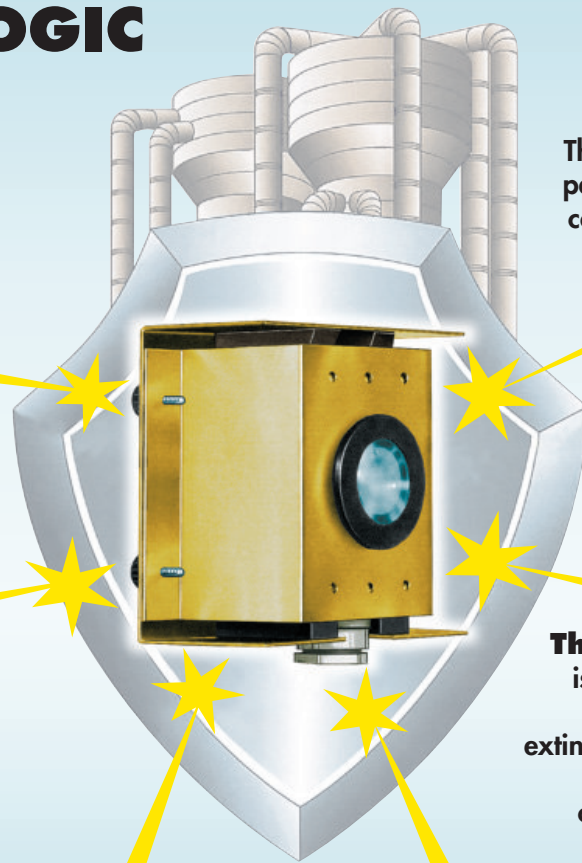
www.mdmpublishing.com



CONTROL LOGIC

Spark detector

designed for dust collection systems to protect storage silos from the risk of fire.



Sparks fly at high speed.

They travel at a hundred kilometres per hour along the ducts of the dust collection system and reach the silo in less than three seconds

The CONTROL LOGIC SPARK DETECTOR

is faster than the sparks themselves. It detects them with its highly sensitive infrared sensor, intercepts and extinguishes them in a flash. It needs no periodic inspection.

The CONTROL LOGIC system is designed for "total supervision". It verifies that sparks have been extinguished, gives prompt warning of any malfunction and, if needed, cuts off the duct and stops the fan.

ISO 9001

20137 Milano - Via Ennio, 25 - Italy
Tel.: + 39 02 5410 0818 - Fax + 39 02 5410 0764
E-mail: controllogic@controllogic.it - Web: www.controllogic.it



CONTROL LOGIC s.r.l.



IR FLAME DETECTOR
RIV-601/FA
EXPLOSIONPROOF
ENCLOSURE

For industrial applications indoors or outdoors where is a risk of explosion and where the explosionproof protection is required. One detector can monitor a vast area and responds immediately to the fire, yet of small size.

BETTER TO KNOW IT BEFORE

Eye is faster than nose.

In the event of live fire the IR FLAME DETECTOR responds immediately

CONTROL LOGIC IR FLAME DETECTOR

the fastest and most effective fire alarm device for industrial applications

Also for

RS485 two-wire serial line



IR FLAME DETECTOR
RIV-601/F
WATERTIGHT
IP 65 ENCLOSURE

For industrial applications indoors or outdoors where fire can spread out rapidly due to the presence of highly inflammable materials, and where vast premises need an optical detector with a great sensitivity and large field of view.

ISO 9001

20137 Milano - Via Ennio, 25 - Italy
Tel.: + 39 02 5410 0818 - Fax + 39 02 5410 0764
E-mail: controllogic@controllogic.it - Web: www.controllogic.it



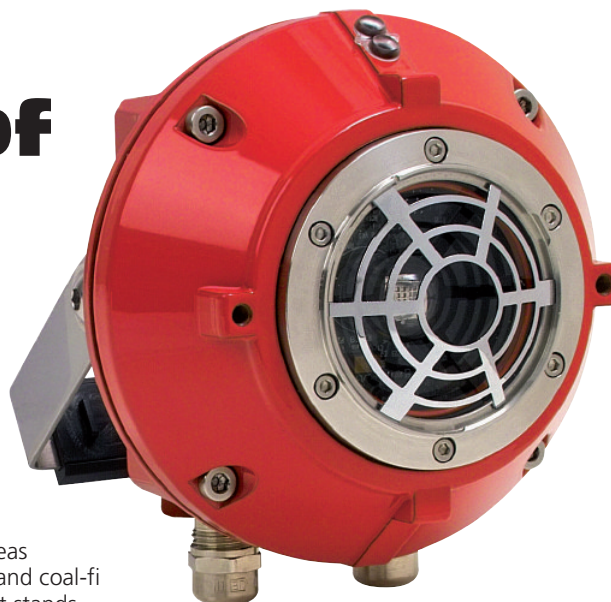
CONTROL LOGIC s.r.l.

Self-monitoring, false alarm-proof and easy to maintain

The new UniVario UV flame detector by ESSER

UV flame detectors react to the ultraviolet components in the flames' radiation and they are installed wherever a quick development of open flames is to be expected by the burning of solid or liquid materials such as gases, oils, synthetic

materials, wood or metal. Examples of typical usage areas are: thermal power stations and coal-fired power plants, engine test stands, industrial plants, printing shops, the wood industry and many more.



ESSER has now expanded its portfolio in this field by another reliable, flexible and user-friendly UV flame detector: The UniVario FMX5000UV.ESSER is distributed exclusively and fulfills the requirements of the highest sensitivity class according to EN 54-10, class 1. Moreover, a VdS certification for the FMX5000UV.ESSER has already been applied for. Being dust-proof and splash-proof in compliance with IP67, it can be used inside as well as outside. The UniVario can also be positioned so that it monitors especially high-risk machine areas and units as a whole. This is facilitated by brackets at the detector base which make the installation as well as adjustment easier.

The UniVario is especially reliable thanks to its high false-alarm security (e.g. from lightning), its contamination monitoring and its self-monitoring function. Here, faults are signaled at the detector itself as well as to the control panel. A special esserbus transponder enables the connection of the detector as well as the transmission of alarms and faults to the FACP. The detector is connected directly to the detector zone of the esserbus transponder (part No. 808622) and is supplied via this through the external energy supply of the transponder. When it comes to user-friendliness, the UniVario scores again with its clear operating and fault display on the detector as well as with its ability to carry out maintenance testing via reed contact. The detector's optics can be easily cleaned by twisting out the protective grating on the detector head.

The UniVario UV Flame Detector FMX- 5000UV.ESSER (Part No. 782313) and the esserbus transponder for UniVario (Part No. 808622) are now available.

Tel: Marketing/Communication
+49-2137-17-527
Email: info@esser-systems.com

C-TEC's XFP Fire Panels bring equanimity to Equiniti

Top specialist fire installation company, Firetel, has completed a major project for Equiniti at Aspect House in Lancing, West Sussex.

As the UK's leading provider of share registration, Equiniti is at the heart of the UK's financial dealings and, as such, the safety of the company's personnel and buildings is vital, a fact clearly reflected in the high technology fire and security systems now in operation on site.

The system consists of two of C-TEC's powerful XFP analogue addressable fire alarm control panels networked together in the security/reception and a vast range of Apollo devices including 184 XP95 smoke detectors, 34 break glass call points, 92 Vector loop powered sounders and seven 100 metre ranging beam detectors. Ten Apollo XP95 input output units are interfaced with various other systems including security doors, gas shut off, computer gas discharge systems, central station monitoring and disability equipment.

Says Jeff Whelan of Firetel: "We were delighted to win such a prestigious contract. Although it did prove quite a complicated project due to the security procedures we had to adhere to and the secure nature of the building, we relished



the challenge. C-TEC's XFP panels were ideal for this kind of installation as they are incredibly flexible and can easily be interfaced to a huge variety of third-party equipment".

Formerly known as Lloyds TSB Registrars until it was bought from the High Street bank last year for £550m by Advent International, Equiniti employs 2000 personnel across the UK and currently acts as Registrar for over 700 companies, including more than 55% of the FTSE 100, managing some 24 million shareholder and employee accounts. The company plans to grow its pension administration, employee benefits and retail investor services divisions as well as pursuing other business process outsourcing opportunities.

For more information, please contact
Alex Saint on +44 (0) 1942 322744
or visit www.c-tec.co.uk

Kentec helps reduce false alarms at Stoke Mandeville Hospital

A new fire system designed to tackle a chronic false alarm problem at Stoke Mandeville Hospital in Buckinghamshire – home to the world renowned National Spinal Injuries Centre, has been hailed a resounding success with an 80% drop in incidents in its first year.

Fire systems specialists Pyrotec Systems, appointed for the design, installation and maintenance of this massive Private Finance Initiative (PFI) funded re-development, chose an open protocol system that interfaces with Kentec Syncro AS control panels, as they offer both versatility and a very high level of intelligence, allowing more accurate interrogation and interpretation of possible fire events within the hospital.

Buckinghamshire Fire & Rescue Service explained: *"It was a serious problem for both organisations. Every time their alarm system activated, our risk-based response would be to send two fire appliances. Invariably on arrival we would find it was a false alarm – a single smoke detector being activated, usually by a cooking activity. More often than not it was burnt toast!"*

"As well as placing a burden on our resources, it was disruptive for staff and patients and it destroyed the credibility of their fire alarm system."

Working with the local NHS Trust and Ray Clark, Stoke Mandeville Hospital's fire safety adviser, the hospital's fire alarm engineers Pyrotec Systems developed a fire safety system that enables the hospital's specially trained fire wardens to investigate the cause of an alarm signal, on the activation of one smoke detector, that either confirms or cancels the 999 call. Guaranteeing that a 999 call is made in the event of a real fire.

However, in the event of a heat detector activating, more than one smoke detector activating or a break glass call point being activated, then the Fire & Rescue Service is summoned immediately.

This open protocol system consists of 28 Kentec panels and 5000 Hochiki devices, allowing seamless integration to a Building Management System that provides fire data intelligence for fire alarm management at many levels. These include connection directly to the telephone exchange, and provision for future expansion of the PFI development.

One of the main requirements of the new system was clarity of distributed



intelligence, with the system required to give a view of the whole system at each control panel so allowing an alarm or fault on the system to be viewed locally.

In addition, with one single comprehensive system throughout the complex, training in fire safety is much simplified as nursing staff readily understand the system wherever they are located on the site. Clarity of zone identification is a major feature of the system. The HTM82 regulations stipulate that a fire alarm must be monitored by a person who, when calling the brigade, must be able to indicate the zone in which the fire has occurred, so the gate closest to that zone may be entered.

For more information please contact Kentec on 01322 222121, email robine@kentec.co.uk or visit www.kentec.co.uk

Quality products from Cranford Controls

Since their establishment in 1993 Cranford Controls has supplied the industry an extensive range of quality products. As the years have advanced, Cranford has focused on developing electronic sounders as our core product range, incorporating the latest technology and requirements of the industry. Designed and manufactured in their custom built ISO9001 facility, approved by LPCB and VdS, the Cranford sounder range is well established and desired.

Their variety and high quality products are well renowned throughout the industry and have helped to build up their world wide customer database.

The key Cranford Controls' success lies within their extensive sounder range; Room Sounders (VRS and VLS), Voice Sounders (VCL), Spatial Sounders (VTG and VPR), Combination Sounder/ Beacon Units (VTB and VSO-LED) and Platform Sounders (VSO and VCT). An assortment of these sounders have EN54 approval and come in an array of voltage ranges to ensure sounders that are suitable for a variety of facilities; all are



RoHS and WEEE compliant.

The most recent additions being the VSO Platform Sounder and VSO-LED Platform Sounder/ Beacon Base have proved a very worth-while and necessary expansion for the Fire and Security sectors. Although both have been carefully designed to fit all leading brands of smoke detector and the VSO is also available in an assortment of colours to match; Cranford also supplies an easy to fit cover plate for use of the items as stand alone devices. Both units are available with a choice of 4 or 32 Tones.

For any further information on the products mentioned and information on additional products to help fully equip your fire safety system please contact their sales team on +44 (0) 1420 592 444

SecuriRAS® ASD 535 aspirating smoke detector: a new milestone in early fire detection

SECURITON's aspirating smoke detectors have been reliably preventing fires for over 40 years. Now the latest generation of fire detection technology is on the market: the ASD 535 is more powerful, more precise and responds more quickly than its predecessors.

A crane motor overheats in a warehouse stacked with chemicals. It escapes the notice of the warehouse crew. Find out what happens next at the end of this article.

The ASD 535 – the ultra-sensitive guardian

The ASD 535 aspirating smoke detector consists principally of a nose and a brain: one or two independent sampling pipes aspirate the air of the area being monitored and convey it to the sampling chamber – the brain – of the fire detection device. This contains a scattered-light smoke detector, which analyses the continuous airflow: if it determines that the air contains smoke particles exceeding the preset threshold, it immediately triggers a pre-alarm or alarm. The signal arrives at the fire alarm control panel or fire brigade, and the incipient fire can be nipped in the bud.

More performance, more precision, more coverage

Securiton has invested much in the development of the new system. The ASD 535's smoke sensor, for instance, features new HD (High Dynamic) technology: its dynamic temperature and contamination compensation capability with patented particle suppression provides unsurpassed levels of detection reliability, as does the sensor's LVSC large volume smoke chamber. Smoke particle sampling sensitivity can be set between 0.002%/m and



10%/m according to the specific circumstances and hazard potential of the area being monitored. Moreover, the ASD 535 benefits from the most powerful fan on the market, which means that larger areas than ever can now be monitored. On commissioning, the auto-learning function automatically adapts the system to the ambient conditions and scales it to the applicable safety standard. Last but not least, the ASD 535's ability to differentiate between smoke particles and impurities such as dust elevates it to a class of its own. False alarms are now a thing of the past.

Quiet, discreet, universally installable

The ASD 535 works discreetly in the background. The sampling pipes can be adapted to the surroundings or even completely concealed, and aspiration is so quiet that the system is welcome even in concert halls. The ASD 535 is the perfect fire guardian for both room and building monitoring: it sniffs out incipient fires in CNC control systems as dependably as it does in airports, cinemas and research centres.

So, how does that story about the chemical warehouse continue? While you have been reading this, the ASD 535 reported the suspicious smoke concentration and the company's fire fighters extinguished the incipient motor fire before it could burst into flames.

For more details please contact:

Securiton AG, Alarm and Security Systems
Alpenstrasse 20, CH-3052 Zollikofen/Bern, Switzerland
Tel: +41 31 910 11 22 Fax: +41 31 910 16 16
Email: info@securiton.com Website: www.securiton.com

Fire Product Search launches E-Newsletter

FIRE PRODUCT SEARCH the world's most popular fire product and equipment guide has launched a new monthly E-Newsletter service. The E-Newsletters contains the latest fire products, information on the latest fire exhibitions plus specialist industry news and insight.



For your copy subscribe to Fire Product Search for FREE at www.fireproductsearch.com

Fire Product Search is an online portal to the world's largest database of fire products. It offers users clear product information and easy links direct to manufacturers' websites, no need for bulky directories, CD's, downloads, or anything else. Fire Product Search is online constantly providing you with information when you need it!

Browse through product categories, search using keywords or by company with ease at www.fireproductsearch.com

Is your company featured on Fire Product Search? We offer a FREE basic company listing including website link and contact details visit www.fireproductsearch.com – **Special Offer** – use password IFP Magazine for a FREE upgrade and include your logo and company profile text.

Prysmian protects Portsmouth's patients

More than 70,000 metres of PRYSMIAN's new generation FP Plus cable has been used in the ongoing £240 million re-development of the Queen Alexandra Hospital in Portsmouth.

The need for a highly durable fire alarm cable was paramount for a hospital environment and as FP Plus meets all of the requirements of BS5839-1:2002 and the new

integrated fire, shock and water test BS8434-2, Keith Meacher, from wholesaler Newey & Eyre, had no hesitation in his recommendation of the cable.

"Quality was a major factor in product provision for this project and Prysmian has always been the supply partner of choice for Newey & Eyre, especially when a premium cable is required. We supplied the new generation FP Plus cable due to its high specification, ease and speed of installation."

Not only has Prysmian cable been supplied for the development, but also FP Firefix fixing clips. Prysmian's unique fixing system allows FP cables to be installed up to 10 times faster than when using alternatives by making use of gas nailing technology. The fixing can be installed in a range of substrates, from concrete to steel and due to their metal based design, the FP Firefix system also conforms to the fixing requirements of BS5839-1:2002 for fire resistant cables.

The new hospital, set for completion in Summer 2010, will provide state of the art health care facilities for residents in Portsmouth and South East Hampshire.

To find out more information about Prysmian's Fire Performance cable range visit the website www.fpcables.co.uk



Sapphire™ - The Definitive Clean Suppression System

Since the demise of Halon 1301, one solution for the safe and efficient total flooding protection of occupied business-critical environments and assets has come to the fore. HYGOOD™ SAPPHIRE™ uses new long-term technology that not only meets today's exacting legislative requirements, it also meets all of those in the foreseeable future, providing the market with the suppression effectiveness, environmental acceptability and sustainability that it is demanding.

It is a high-performance custom-engineered fire extinguishing system that uses 3M™ Novec 1230™ Fire Protection Fluid that is stored as a low vapour pressure fluid. Upon system activation it discharges within ten seconds and instantly converts into a clear, colourless and odourless gas, extinguishing ordinary combustible, electrical and flammable liquid fires before they have the chance to take hold and spread.

Typical total flooding applications use a low concentration of the fluid that is well below the agent's saturation or condensation level. SAPPHIRE has a negligible impact on the environment, insignificant global warming potential – lower than any of the halocarbon agents that are acceptable for use in occupied spaces – and zero ozone depleting potential. After extinguishing the fire, it is dispersed through natural ventilation.

SAPPHIRE also has a remarkably low atmospheric lifetime of between three and five days, so does not have any appreciable impact on climate change. To put this into perspective, this three to five-day lifetime compares with an atmospheric life for Halon 1301 of 65 years. It has a global warming potential of just "one", which means that several thousand kilograms of the Novec 1230 fluid would have to be released to have the same impact on climate change as just one kilogramme of a typical alternative halocarbon.

Significantly, SAPPHIRE is not among the gases identified by the Kyoto Protocol as representing man-made interference with the global climate system. So much so that the sustainability of a SAPPHIRE installation is backed by a global 20 year complete-replacement environmental warranty from Tyco Fire Suppression & Building Products against its banning or restriction on environmental grounds by government or regulatory bodies.

Unlike many other fluid fire extinguishing agents, SAPPHIRE can be used with complete confidence to suppress fires involving vital electronic equipment. It is non-conductive and non-corrosive, and leaves no residue to damage sensitive equipment, so is ideally suited for protecting occupied computer facilities, control rooms, data storage facilities, and telecommunication centres, as well as irreplaceable document archives and delicate historic relics.

SAPPHIRE systems have an installed footprint similar to that of other chemically-based clean



agent systems and, most significantly, the Novec 1230 fluid has the lowest design concentration of any viable Halon 1301 chemical alternative. While certain halocarbons and inert gases are used at design concentrations that are below the NOEL or No Observed Adverse Effect Level, the SAPPHIRE system's huge safety margin provides the end user with a significant degree of confidence.

The filling and recharging of a SAPPHIRE installation is quick and easy. Thanks to the agent's high boiling point, it can be transported in lightweight drums rather than expensive pressurised seamless containers, allowing the fluid to be air-freighted.

The system has amassed a host of international approvals including LPCB (Loss Prevention Certification Board), FM (Factory Mutual) and UL (Underwriters Laboratories) listing. It is listed as "acceptable without restrictions" by the US Environmental Protection Agency's SNAP (Significant New Alternatives Program), is registered under Europe's ELINCS (European List of Notified Chemical Substances) scheme, and has been accepted for inclusion in ISO 14520 (Gaseous fire-extinguishing systems).

IFP

Further information on SAPPHIRE is available from: Tyco Fire Suppression & Building Products by telephone on +44 (0) 161 875 0402, by fax on +44 (0) 161 875 0493, or via email at marketing@tyco-bspd.com. Further information can also be found at www.hygood.co.uk



Fire Protection Systems

delivering 3M™ Novec™ 1230 Fire Protection Fluid

Data Centre fire suppression systems

- Uses 3M Novec 1230 fire protection fluid
- Proven fire suppression performance
- Significantly high safety margins
- Full range of International Approvals
- 20 year Hygood environmental warranty



Hygood Fire Protection Systems are manufactured by **Tyco Fire Suppression & Building Products**



tyco
*Fire Suppression
& Building Products*

Burlingham House
Hewett Road
Gapton Hall Industrial Estate
Great Yarmouth
Norfolk NR31 0NN

Tel +44 (0)1493 417600
Fax +44 (0)1493 417700
E-mail: Hygood-info@tyco-bspd.com
www.hygood.co.uk

Detection goes virtual with eLAN fire system from Kentec

Kentec Technical Director Robert Jefferys explains how the new revolutionary web-based eLAN fire alarm system technology can be programmed and interrogated remotely, with significant savings on time and costs.

The ideal for the new cost-efficient approach to remote diagnostics and interrogation of a system, using an ordinary Web browser, is expressed perfectly by the powerful and secure eLAN fire control panel system from VES (a wholly owned subsidiary of Kentec Electronics Limited). These world-class systems are specifically developed to exploit the telephone or Internet connection facility and bring fire alarm system communications right up to date and straight onto your PC screen.

Benefits of 'virtuality'

The eLAN is the solution for the most demanding of projects. The transparency and inter-operability granted by eLAN's real-time on-screen overview of the system is immediately evident to system operators, who recognise the benefits derived from a virtual on-line presentation of the fire control panel for system diagnosis, configuration, and interaction . . . regardless of where the physical panel is located.

This 'virtuality' is of great economic significance because it not only cuts the ever-increasing costs of service calls but also permits trouble-shooting by allowing the entire system to be interrogated remotely.

Remote overview of system

The capability of the eLAN FM-listed fire alarm system is scalable – ranging from a stand alone, single panel system with over 500 devices, to a fully supervised and fault tolerant inter-panel networked system with more than 60,000 points and 500 zones over 127 Panels. And because every node is networked as one system, detailed information is received down to every point.

Available in two or four loop configurations with network-wide releasing functionality, the fire control panels and ancillaries have the power to be comprehensively applicable, being suitable for any size of project.

Hardware

The hardware can be configured as a stand-alone panel with just a few devices for a small building or Releasing System. It can also operate as the building system AND Releasing System and, for example, be part of a network with a total of 127 nodes.



Software

Business Suite is an intuitive business, monitoring and access software suite of modules that overcomes training barriers to achieve simple and secure fire alarm systems. Operators can log into their virtual network from any place in the world.

Plug and play network programming

Easy plug and play networking allows the network to be programmed remotely as a single system with no special software and no additional on-site computer. The entire network is programmed at the same time as a single system, saving hours of on-site engineering time.

Bird's eye view

For a snapshot in practically real-time, anytime, there's an easy-to-understand bird's eye view of every system at every location.

eLAN fire panels and the eSP business suite from VES – a wholly owned subsidiary of Kentec Electronics Limited who themselves are Europe's leading independent fire control panel manufacturer – are mature and proven products that have been developed over the last 5 years by the company's team of industry experts in fire and communications technologies.

IFP

For more information
contact: Kentec on +44
(0)1322 222121
Email sales@kentec.co.uk or
visit www.kentec.co.uk

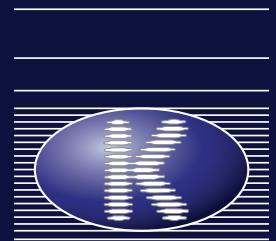
Is this the way you would dream of managing your Fire Detection System....?



...give us a call and we'll
show you how it's done!

+44(0)1322 222121 www.kentec.co.uk (Kentec Electronics Ltd., UK)

+1 800 270 3066 www.ves-network.com (VES LLC, USA)



Kentec Electronics Ltd.



A division of Kentec Electronics Ltd.

Xtralis Technology Detection and Earl

*"Would you use minimum quality Class C rope if your life depended on it?"
Pic courtesy of Civil Defence Academy – Singapore Civil Defence Force*



**By Peter
Massingberd-
Mundy**

Technology and Expert
Practices Manager,
Xtralis – manufacturer
of VESDA

As a follow on to the article published in November 2008 entitled "Understanding the normal capability of Aspirating Smoke Detection", this short piece re-iterates the November article's main points while illustrating how the Xtralis range of ASD products comfortably satisfy the requirements of EN 54-20.

Of note in the original article was the statement "The result of a Class C approval to EN54-20 is confidence that a particular aspirating system is at least as reactive to fire as any EN 54-7 approved smoke detector." While this is generally true given the cumulative advantage of ASD systems, it is potentially misleading. In layman's terms, clause 16.5.4 of EN54-20:2006 means that in test conditions, according to EN54-20, a Class C ASD system can respond up to 60 seconds after a standard point detector when smoke from a fire only enters the furthest hole.

Is this what you want? If not, then you should clearly specify that a Class A or B ASD system is required.

An allowance for transport time

Taken out of context, the introduction above is alarming! *It is possible* that ASD technology, which for years has been associated with Early Warning smoke detection, can, under EN54-20, actually respond later than a conventional point detector? Of course, this is not normally the case and needs to be understood in context. Firstly, such delayed detection is only possible if:

- the ASD detection unit has been configured to be *just* sensitive enough to meet EN54-20 Class C,
 - the fire to be detected has a fast growth rate,
 - the smoke from that fire only enters a *single* sampling hole far distant from the detector.
- It has been very rare for these three factors to

occur simultaneously, particularly given the evidence presented in the November 2008 article, which concluded that "the majority of ASD installations currently installed achieve Class B capability or better."

At this point, it is worth noting that under the previous European product standard, CEA4022, an ASD system was permitted to respond up to 120 seconds *after* the End-of-Test (EOT) in the four standard test fires (specifically TF2- TF5 – identical to those for EN 54-7 and EN 54-20 Class C). This was in compensation for the transport time, which was limited to 120 seconds. A more restrictive allowance of up to 60 seconds after EOT is included in EN 54-20 (ref EN 54-20:2006 clause 6.15.4) and there is no specific limitation on the maximum transport time.

*For more information please
contact:
Tel: +44 1442 242 330
Email: marketing-emea@
xtralis.com*

Delivers Reliable Warning

VESDA approvals

Some time ago, as the market leader of ASD systems, Xtralis (formally Vision Systems) ensured that the VESDA systems approved to CEA4022 detected the four test fires *before* EOT with no allowance for transport time, thus demonstrating that a single VESDA sampling hole is more than capable of matching the performance requirements of point detectors – without any correction or allowance for transport time. To be specific, smoke from all four test fires was detected before the EOT when entering a single (“worst case”) hole out of 100 sampling holes on a full length (200m) VESDA system with an alarm threshold of 0.06% obscuration/m. (ref: LPCB report TE94690)

Moreover, in the field, the installed capability of VESDA systems has always comfortably exceeded the minimum requirements of the standard. Invariably, fewer than 100 holes are installed and, as discussed in the November 2008 article, the majority of systems are actually Class B or better.

ASPIRE2

Fortunately, Xtralis also provides a comprehensive tool (called ASPIRE2) to establish the performance and the EN 54-20 Class of any particular VESDA system – no matter the pipe and hole configuration.

A convenient interface enables users to enter details of the pipe runs (including bends, tees, capillary off-takes and hole positions) for a particular project and then cross check the results in a three-dimensional rotatable viewer. At the click of a button, the software will optimise the design and provide recommended hole sizes to achieve a “good” system. For any given design, the software calculates the flow entering each hole, thus calculating the time to transport smoke from each hole to the detector and the effective sensitivity of each single hole (i.e. the concentration of smoke needed at a single hole to trigger an alarm).

This tool has been developed over many years and, in addition to providing clear prediction of the Class of any particular VESDA system (including VLP, VLS, VLC and VLF), now supports the ICAM range of ASD detectors from Xtralis as well. For details, visit www.xtralis.com

A new sensitivity tab in the software (see figure 1) compares the predicted performance of each hole with agreed limits for each EN54-20 Class (e.g. a Class B

system must have 4.5% obscuration/m or better at each sampling hole and transport time of < 90 seconds). Thus, ASPIRE2 clearly indicates the Class achieved by each alarm threshold of any particular VESDA system.

ASPIRE2 provides predictions for transporting smoke from the sampling point to the detector. As discussed in a previous article, “CFD – Colour for Directors?,” published in IFP in February 2008, the latest CFD software used to model fires can provide predictions for how smoke travels from the fire to the sampling holes. The converter linking ASPIRE2 data to FDS5 introduced in this article is continually being improved and serves to demonstrate Xtralis’ commitment to understanding and accurately predicting the performance of its systems in pursuit of Performance Based Design.

Conclusion

From the information presented above and in November’s article, it is clear that, while a Class C aspirating smoke detector may be considered to be code compliant, most applications will benefit from a Class B (or better) solution. The evidence presented demonstrates that Class A & B systems provide earlier warning without risk of false alarms so specifiers of ASD systems can confidently require a Class B or, where relevant, Class A system to achieve the best possible protection against fire.

In further support of providing detection that is “better than code compliant”, the latest version of ASPIRE2 not only clearly indicates the Class of any system, but it can be integrated with the most popular CFD Fire Simulator to support validated Performance-Based Designs.

IFP

Excepting any direct references to EN54-20, the performance figures and experience given in this piece and the previous article published in November 2008 pertain to VESDA technology only.

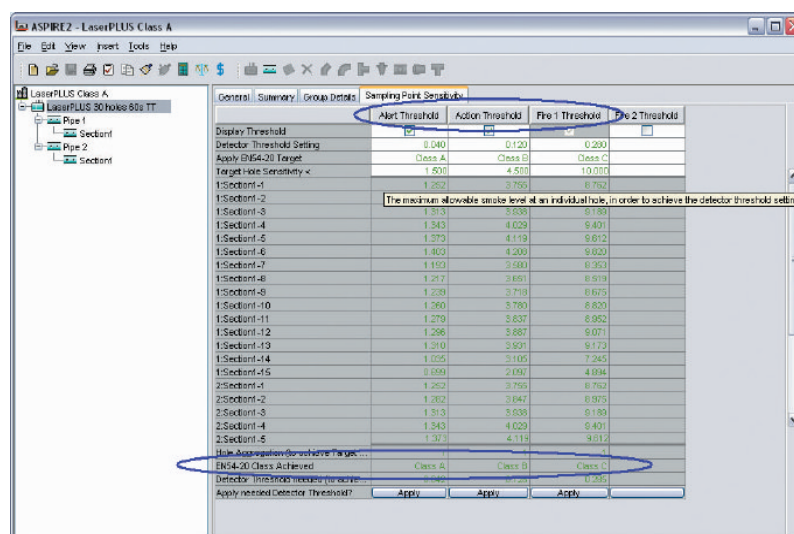


Figure 1 – ASPIRE2 clearly indicates the Class of each alarm threshold



EN 54 PART 20



Are you
ready?

Be prepared with Xtralis VESDA

By June of 2009, aspirating smoke detection solutions deployed across Europe need to comply with the new **EN 54-20** European product standard. **Are you ready to meet this challenge? Xtralis is.**

Xtralis **VESDA**, the world's leading brand of ASD solutions, was first in the fire industry to meet the demanding requirements of **EN 54-20**. So you can rest assured that with Xtralis VESDA you will have a powerful, compliant solution to protect safety, critical infrastructure and business continuity today and well into the future.

To learn how VESDA can help you be **EN 54-20** ready, go to www.xtralis.com/en54-20 or contact us at **+44 1442 242 330**.





Survivability of Fire Alarm Systems

A High Rise Building Case Study



**By Bobby Patrick,
MSFPE, PE**

President, FireLogix
Engineering, Ltd.

Fire alarm and voice evacuation systems are the primary means for first responders (i.e. fire or police officials) to communicate with building occupants in an emergency. Fire departments use voice evacuation systems to direct occupants to the safest location in an emergency. The systems are increasingly being used to alert building occupants of other types of emergencies including bomb threats, weather threats, and other extreme events. If these systems are susceptible to damage from fire or impact their survivability is greatly reduced. How can you ensure that your fire alarm and voice evacuation system will remain operational during an emergency?

This article will define survivability. It will briefly cover code requirements (from NFPA 72). A case study will be presented to depict key considerations in implementing a fire alarm system with a high degree of survivability. This article will benefit engineers, property owners, and fire alarm designers by explaining key considerations for implementing survivability.

What is survivability?

Survivability describes the ability of a fire alarm system to provide audible (voice and signal) and visible notification long enough to evacuate the building and have the fire service restore control (Gagnon and Kirby). This term from NFPA 72

(National Fire Protection Association) is primarily used to ensure that a fire in a given area does not disable the system for other areas. In this article, we will extend this meaning to address the general ability of a fire alarm and voice evacuation system to remain operational during an emergency.

Generally, increasing system survivability raises system cost as well. Some of the tactics discussed in this article may be required by code; however, many of them are not. NFPA 72 and building codes represent the minimum safe requirements. The code requirements do not address an individual client's needs in terms of survivability. For example the client's survivability requirements for a critical

Figure 1 – distributed FACU architecture

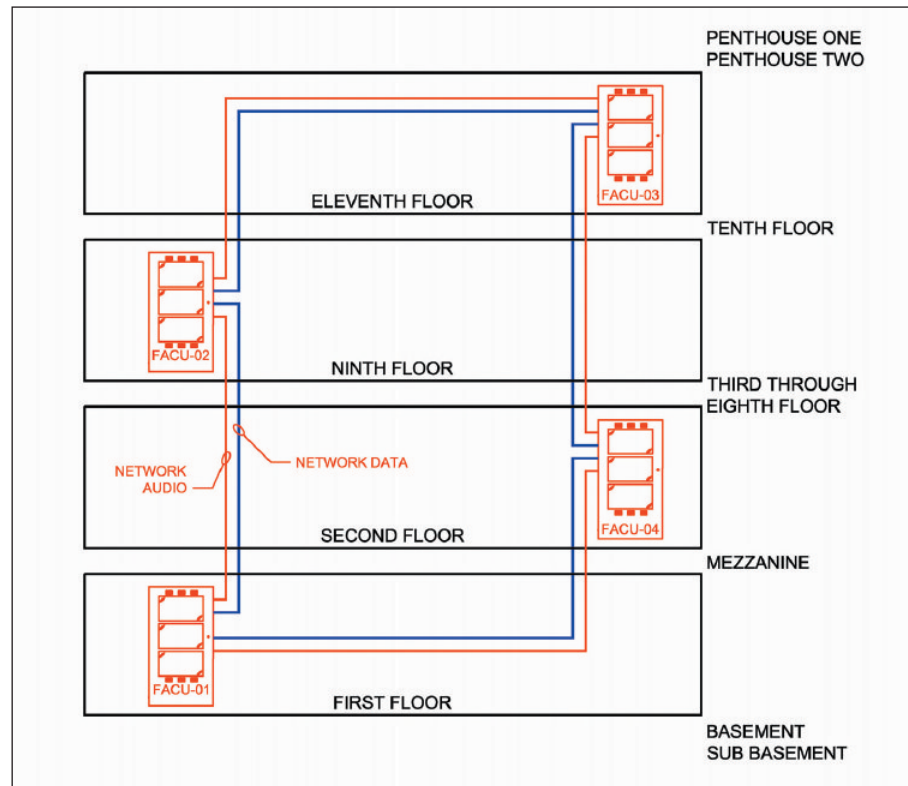


Table 1 – Case Study Distribution of Components

Item	Distribution
FACU	Four panels distributed to different floors
Audio Amplifiers	Amplifiers distributed in FACU to different floors
SNAC Panels	Two on each floor

government high rise may differ than those for an apartment building.

Code requirements

First let's briefly discuss survivability requirements in NFPA 72, *The National Fire Alarm Code*. The general survivability requirements are found under NFPA 72 §6.9.10.4. These requirements apply to audible and visible notification. They include the following:

- 1 Fire alarm systems used for partial evacuation/reluctation must be designed so that fire inside an evacuation zone does not impair system operation outside the evacuation zone. A good example of this is ensuring that a fire on a single floor of a high rise, which destroys circuitry there, does not disable the system operation on other floors.
- 2 Notification appliance circuits must be protected until they enter the zone which they serve. Five protection options are presented in NFPA 72 and focus on fire resistance (not mechanical protection). This also helps meet the requirement stated above (#2).
- 3 Where the separation of emergency voice/alarm control equipment locations results in the portions of the system controlled by one location being dependent upon the control equipment in other locations, the circuits between the dependent controls shall be protected against attack by fire using one of the methods outlined in NFPA 72.

NFPA 72 tends to focus on protecting circuits

with fire resistive construction or using fire resistive cables. This article further addresses the overall system architecture, physical protection, and circuit configuration.

Technical approaches to survivability

Here we will use a case study to demonstrate key elements of implementing a highly survivable system. The solutions implemented here are (in some cases) dependent on the ability and features of the equipment being implemented. These features are fairly standard for most major system manufacturers.

Case study background

Our case study will focus on a high rise building used for critical government functions. Functions include courts, attorneys, tax departments, and government officials. After the 9/11 tragedy, survivability of fire alarm and voice evacuation systems became increasingly important.

The facility is 16 stories tall. It is concrete construction. A fire alarm and voice evacuation system is required by the local building codes. The tenant will also use the voice evacuation system to alert occupants of various emergencies including bomb threats, weather, etc. Based on the importance of the functions housed here, it is critical for the system to remain functional during an emergency event. The client requests the following design considerations:

Recycle Your Halon.

The future of the planet is in your hands.

It's imperative to the health of our planet that we reduce the impact that halon has on our atmosphere. Halon Banking Systems is dedicated to the environmentally responsible recycling and redeployment of halon for essential end-users. Let us help you dispose safely of your halon, and together, we can make the world a better place.

Contact us today 001-416-458-1990.



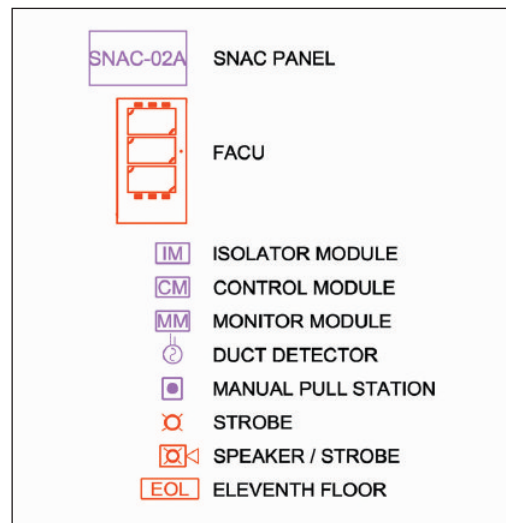
HALON BANKING SYSTEMS

8601 73rd Avenue Suite #11, Brooklyn Park, MN 55428 USA
Tel: 001-416-458-1990 Fax: 001-763-315-0399
info@halonbankingsystems.us | www.halonbankingsystems.com

Table 2 – Case Study Circuit Types

Circuit Type	Class	Notes
Data Network	Class A	See Figure 1
Audio Network	Class A	See Figure 1
Floor SLC	Class B	See Figure 3
Riser SLC	Class A	isolator modules at floor. See Figure 3
Audio (floor level)	Class B Redundant	See Figure 5
Visual NAC	Class B Redundant	See Figure 4

Figure 2 – symbols used



- 1 The system should be impact resistant.
- 2 Survivability requirements of NFPA 72 (covered earlier) must be implemented
- 3 A single notification appliance circuit (NAC) failure should not cause complete failure of notification systems in an evacuation zone. In other words, if a notification appliance circuit fails, some means of notification should still be available in a given evacuation zone.
- 4 There should not be a single point of failure on the evacuation signaling system. For example, if the fire alarm control unit (FACU) fails, some means of transmitting voice should still be available.
- 5 An event in a single area of the building should not cause system failure.

System architecture

System Architecture refers to the basic layout of the fire alarm system's major components and network. Components discussed here include FACU, voice system amplifiers, and supplementary notification appliance circuit (SNAC) panels. Survivability in fire alarm systems can be improved by distributing these components across the facility.

First let's look at the FACU. Often, fire alarm systems are

implemented with a single FACU. This is a centralized, non-distributed approach. Unfortunately, a failure at the FACU will cause failure of the entire system. This represents a single point of failure on the system. Most major FACU manufacturers produce panels which can be networked together. This enables designers to use multiple panels which can "talk" to one another. Using networked FACU, designers can distribute the FACU operations throughout the building. Normally this materializes as a main FACU and several smaller distributed FACU located in different areas of a facility. If a single FACU fails, or the network fails, each FACU will still operate autonomously.

Next let's review voice system amplifiers. This is another item which is notoriously centralized in a single panel, which again, represents a single point of failure for the entire voice evacuation system. Many popular fire alarm systems provide the ability to distribute amplifiers throughout the building as well. A cost effective approach is to distribute amplifiers with the distributed FACU as previously discussed. This brings the same benefits as distributing the FACU.

Finally, let's review SNAC panels. SNAC panels are commonly referred to as "booster panels" or "power panels" for notification appliance circuits. SNAC panels are dependent on the FACU which they are connected to (the FACU triggers the unit

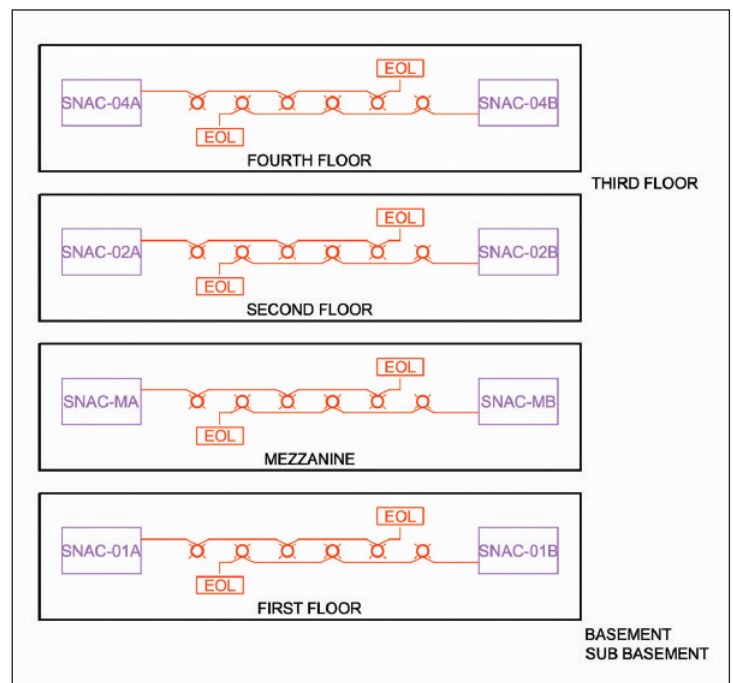


Figure 3 – typical SLC circuits

to start the strobes). Using two separate panels to signal a given evacuation zone improves survivability. It is important to note that the panels must be synchronized so that strobes flash in unison. This solution is further discussed under Circuit Configurations.

To meet our client's objectives, we will use four FACU's. Each panel will be located on a different floor. Amplifiers will be distributed to each FACU. SNAC panels will be distributed to each floor. Each floor will have two SNAC panels which will enable circuit configurations which are further discussed under Circuit Configuration below. FACU communicate with one another via two riser circuits, one for audio and the other for data (see Figure 1).

Circuit configuration

Circuit configuration refers to the ability of the circuit to resist faults such as ground, short, or open circuits. NFPA 72 §6.4 provides various circuit classifications which describe the circuit's ability to operate under fault conditions. The first classification is the circuit Class which describes the circuit's ability to operate under a single open or ground condition. The second classification is the circuit Style which further classifies the circuit's ability to operate under additional conditions such as short and loss of carrier. We will provide a brief description of the circuit Classes. A complete description of the Classes and Styles can be found in NFPA 72.

Class B circuits are generally two wire circuits which cannot function beyond the point of ground or open circuit conditions. For example, an initiating device circuit (IDC) would not receive alarm conditions from a detector located beyond the circuit ground or open condition. In another example, a strobe beyond an open circuit condition would not light up on alarm. A final example would be if networked FACUs could not communicate with one another beyond an open circuit.

Class A circuits are typically four wire circuits which still function beyond the point of an open circuit or ground fault. A simplified way of thinking of a Class A circuit is to think of a circuit "loop" which can communicate from either end. An example is an IDC which could still receive an alarm condition from detectors beyond an open circuit. Another example is a strobe beyond an open circuit which can still function in alarm. A final example is a set of distributed FACUs which are connected in a loop and can still communicate if the circuit becomes open or grounded.

Another way to make circuits fault tolerant is to isolate portions of a circuit upon a fault condition. Most fire alarm system manufacturers produce isolator modules for this purpose.

In our case study we must address several different circuit types. These include the following:

Data Network – The data network provides a connection between FACUs (see Figure 1). The data network is critical since it enables FACUs to communicate to one another. Because of its importance, we will configure it as a Class A circuit.

Audio Network – The audio network provides audio connectivity between FACUs. Essentially this allows voice to be broadcast from a single location to any evacuation zone served by a FACU on the audio network. This is also a highly critical circuit since it broadcasts audio to any selective zone in the facility. For this reason we will also use a Class A circuit.

INTRODUCING THE COMPACT 100DB INCREDIBLY VERSATILE ALERT POINT

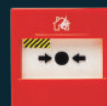
NEW

It's a fire alarm that thinks
it's a panic alarm



- Suitable for small offices, portakabins, industrial and retail applications
- Stand alone, self contained alarm system
- Quick and easy to install - protecting within minutes
- Incorporates a resettable call point and has the ability to link to extra Alert Points, sounders and detectors
- Robust yet contemporary design

Reduce cost and time with the Stopper Line



RESEt CALL POINT
EN54-11 approved
resettable - no broken glass



STOPPER®
prevents false
alarms



EXIT STOPPER®
prevents unauthorised
exits/entries



EXTINGUISHER STOPPER®
prevents extinguisher misuse



STEEL WEB STOPPER®
prevents detector misuse

Safety Technology International (Europe) Ltd

Tel: +44 (0) 1527 520999 Fax: +44 (0) 1527 501999
Email: info@sti-europe.com Website: www.sti-europe.com



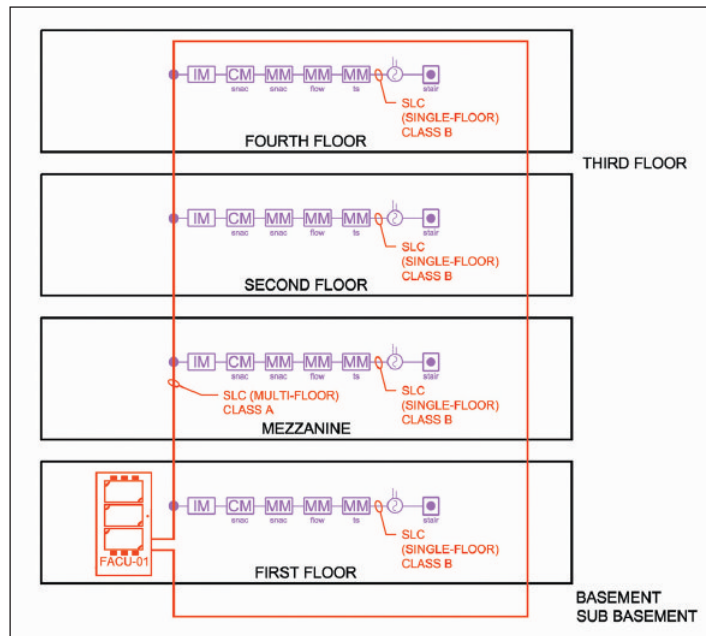
Patent No.: 2 406 717 / 2 430 554

Certificate No. 639
Assessed to BS9001:2000

EN54-11 Cert No. 6338/02
Reset Series 31

Global Manufacturers and Distributors of The Stopper® Line

Figure 4 – typical strobe circuits



SLC (individual floor) – This signaling line circuit (SLC) connects addressable devices in a given area. These circuits are fed from the SLC riser (see below). In our case this area is a single floor. It does not span multiple floors. Individual floor SLCs are less critical than the audio or data network. Floor level SLCs can be configured as Class B and still enable us to meet the client's objectives.

SLC (riser) – This SLC spans multiple floors and provides a common connection between individual floor SLCs and the FACU. This circuit is more important than the "individual floor" circuits because it affects multiple evacuation zones. For this reason, we will configure this circuit as Class A. Furthermore, we will place isolator modules at each connection to "floor level" SLCs. Using this approach, a fault on the SLC floor circuit will not affect the SLC riser circuit.

Audio (floor level) – The "floor level" audio circuit serves a single evacuation zone. In our case this represents a single floor. Our client's objective is to maintain voice notification even in the event of complete failure of this circuit. Achieving this requires a somewhat unique configuration. The worst case scenario would be failure of the FACU or amplifiers serving this evacuation zone. To overcome this issue, we will use two Class B redundant audio circuits fed from different panels. Adjacent speakers are connected to different circuits. In this configuration, complete failure of a circuit or panel will still leave half of the speakers operational.

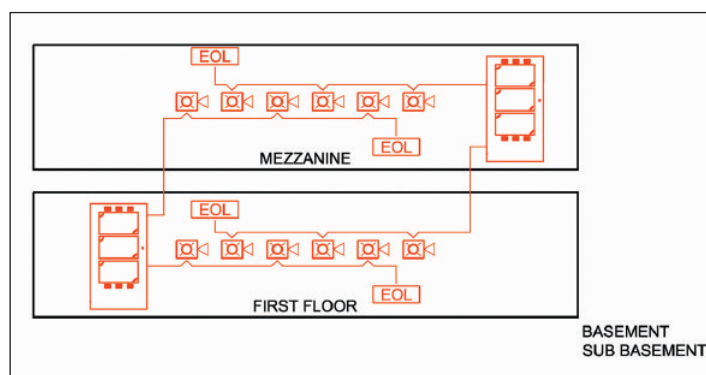


Figure 5 – typical audio circuits

Visual NAC – The visual NAC or "strobe" circuits serve a single evacuation zone (or a portion of a zone). Our client's objective is to maintain visual notification even in the event of complete failure of this circuit. Achieving this requires a somewhat unique configuration. The worst case scenario would be failure of the FACU or SNAC panel serving this evacuation zone. To overcome this issue, we will use two Class B redundant strobe circuits fed from different SNAC and FACU panels. Adjacent strobes are connected to different circuits. In this configuration, complete failure of a circuit or panel will still leave half of the strobes operational.

Physical protection

Physical protection is used to keep circuits and equipment

safe from mechanical or fire damage. In this case physical protection options include the following:

- Fire resistant construction to house and protect panels
- Fire resistant construction to conceal and protect critical cables
- Fire resistant cables to protect individual circuits
- Conduit to protect cables from mechanical damage
- Seismic protection (beyond the scope of this article)

Placing panels inside fire/smoke resistive areas greatly reduces the likelihood of the panel being destroyed by smoke or fire. This applies to FACU, SNAC panels, and voice system amplifiers.

Cables can be protected from fire using either fire rated construction or fire resistive cables. Fire rated construction is commonly used to protect vertical cable runs (in concealed shafts) penetrating multiple floors. In most cases (but not all), the vertical shaft created for this type of run will have to be fire and smoke resistant construction to satisfy building codes. It is less common to use fire rated construction to protect horizontal cable runs.

Common fire resistive cables are circuit integrity (CI) and mineral insulated (MI) cable. MI cable is often considered insulated to install. For this reason contractors generally prefer to install CI cable when fire resistive cable is required. CI cable is tested under UL 2196. It can withstand 1,850°F for two hours. Fire resistive cables should be used selectively since their costs are significantly higher than standard cables.

NFPA 72 does not address mechanical protection within the scope of survivability. Mechanical protection involves protecting circuits and equipment from impact. Concealing circuits and equipment in fire rated construction provides a level of protection against impact. Placing cables in metal conduit is probably the best means of protecting them from impact.

Table 3 – Case Study Physical Protection

Item	Physical Protection
Panels	Rated Construction
Data Network	Rated Construction and CI Cable outside of rated construction; metal conduit
Audio Network	Rated Construction and CI Cable outside of rated construction; metal conduit
Floor SLC	Metal conduit
Riser SLC	Rated Construction and CI Cable outside of rated construction; metal conduit
Audio (floor level)	Metal conduit
Visual NAC	Metal conduit

Now, back to our case study... Our client is particularly concerned with keeping the system operational in various emergencies including fire, terrorist attack, and natural disasters. Based on this, we recommend the following:

- 1** Install all panels within 2 hour fire resistant construction (rooms with rated walls and doors).
- 2** All risers and vertical penetrations will be installed within 2 hour rated fire resistant shafts.
- 3** Risers and network cables leaving the fire rated construction should be CI (2 hour) rated cables.
- 4** All circuits should be installed in metal conduit.

Our client's building is fully protected by automatic fire sprinklers. The local code does not require rated cables in this case; however, these recommendations are focused on meeting client objectives.

Conclusion

In this article we have taken a broad look at fire alarm survivability. Through the case study we have demonstrated how to use architecture (distribution), physical protection, and circuit configuration to achieve a high degree of survivability. The cost and usefulness of these methods must be carefully balanced to meet client objectives both in terms of budget and achieving the desired level of survivability.

IFP

Works cited

Gagnon, Robert and Ronald Kirby. *A Designer's Guide to Fire Alarm Systems*. Quincy: National Fire Protection Association, Inc., 2003.

National Fire Protection Association. *NFPA 72 – National Fire Alarm Code – 2007 Edition*. Quincy: NFPA, 2006.

Bobby Patrick, PE is the President of FireLogix Engineering, Ltd. (www.FireLogix.biz), a leading fire protection engineering and code consulting firm based in Cincinnati, Ohio. He can be reached by phone at (513) 746-6211 or email bobby.patrick@FireLogix.biz

APPROVED

FIRE ALARM CONTROL PANELS
CERTIFIED TO EN54-2/4
LVD, EMC, CPD COMPLIANT

AUTOMATIC EXTINGUISHER PANELS
CERTIFIED TO EN12094-1 & EN54-2/4
LVD, EMC, CPD COMPLIANT

12V & 24V POWER SUPPLIES
CERTIFIED TO EN54-4
LVD, EMC, CPD COMPLIANT

C-TEC is the only UK fire panel manufacturer with third-party product certifications and factory process approvals from the LPCB, BSI and VdS.

Currently trading in over 60 countries worldwide, our commitment to quality is underlined by our ISO 9001 accreditation (held since 1994) and our corporate membership of the Fire Industry Association (FIA).

When it comes to high-quality standards-compliant life safety equipment, you're safe with C-TEC

+44 (0)1942 322744 @ sales@c-tec.co.uk www.c-tec.co.uk

You're safe with C-TEC



If you want to know more, talk to Hochiki today.



www.hochikieurope.com



Raising The Alarm On Fire Detection Myths

By Paul Bryant

CEO of Kingfell Plc,
London

Automatic fire detection is a base requirement of most fire strategies. It is the mechanism which, it is assumed, will inspire actions to occur that will eventually lead to the safe evacuation of people from a building, and / or the effective extinguishing of a fire. In all probability, it is the most widely acknowledged component of the overall fire safety and protection provisions of a building. Yet it is also, potentially, the most misunderstood – right from the standardisation behind fire detection, through to its application.

So, let us take a brief look at what are probably the top four myths surrounding fire detection:

Myth One: a good fire detection system will protect me

Many years ago, I was asked to audit an extremely expensive and comprehensive fire detection system installed to protect a very large computer suite. The owners and specifiers were very proud of their system. However, it became clear that the fire strategy had not been fully thought through. When asked what would happen after a fire was

detected, the reply was: “well, the alarm bells will go off”. When asked what would happen after the bells went off, the exasperated reply was “well, people will evacuate the building”.

It soon became apparent that the sole purpose for such an expensive system was to protect the computers. However, the way this was to be achieved was not at all clear. What had failed to be appreciated is that fire detection is simply the start of the sequence, and not the total answer.

There is a flow chart in British Standard PD 7974-4: 2003 (*Application of fire safety engineering principles to the design of buildings. Detection*



of fire and activation of fire protection systems) and PAS 911: 2007 (*Fire strategies – guidance and framework for their formulation*), although they are formatted differently in each document. What the chart shows is that there are many possible options following detection that will need to be addressed in order to achieve key objectives. In short, whether designed, installed, commissioned and maintained to British, American or international standards, the fire detection system must support the fire strategy rather than the other way round.

Myth Two: the more fire detectors, the better

There are some people who really do believe that specifying a high density of fire detection in every part of the building is the best policy. I can only suppose that these professional fire engineers want to ensure that “the finger of suspicion” will not be pointed at them if a fire in a building covered by their designs is not detected in good time? The outcome, predictably, is very likely to be over-specification.

British Standards endeavoured to overcome this with the publication of BS 5839 Part 1: 1998 (*Fire detection and alarm systems for buildings. Code of practice for system design, installation and servicing*), which first introduced categories of fire detection system. These were further updated in the current edition.

There are two basic life protection categories in the Standard; L systems are for automatic fire detection systems intended for the protection of life, and M systems are manual systems and, therefore, incorporate no automatic fire detectors. P systems are automatic fire detection systems intended for the protection of property, and was introduced so that the requirements of insurers could also be contained within a British Standard. Prior to this there was a separate insurers’ FOC (Fire Offices’ Committee)/LPC (Loss Prevention Council) standard for fire detection systems designed for property protection.

Both the L and P categories are subdivided into further categories determining the level of protection, with the L categories ranging from L1 to L5, and P comprising P1 and P2. L1 and P1 were for comprehensive detection throughout the building, with the other categories covering different levels of partial protection. The important principle

behind this is that the level of cover provided by the fire detection should be commensurate with the requirements for the building and its occupancy. In this way it avoids costly and unnecessary over-specification. Other countries have their own approach to this issue.

However, what has happened is that some consultants and contractors specify L1, P1 or both in the misguided belief that this will ensure the best form of cover. This is simply not the case. For example, an L3 system is designed to give a warning of fire at a stage that is early enough to enable all occupants – other than possibly those in the room where the fire originated – to escape safely, before the escape routes are impassable owing to the presence of fire, smoke or toxic gases. So such a system, providing it is properly designed, may be just as effective as an L1 system, as part of an overall life safety strategy. It will certainly cost a lot less in both capital and maintenance terms.

So, once again, a strong argument in favour of the contention that the fire detection system must support the fire strategy rather than the other way round.

Myth Three: the best systems still use point-type detection connected via mineral insulated cable

In many cases, point-type detection systems on an ultra-robust wired network may be the most appropriate form of detection. This however ignores the extensive progress made in recent years in many aspects of detection technology, in cable design, and in non-cable technology. In every situation, all appropriate methods and technologies should be seriously considered, whether radio-based, utilising CCTV, or whatever advances and innovations come on to the market. For example, the technology is now available for individual fire detectors to be issued with unique IP (Internet Protocol) address. This enables “pre-alarm”, “alarm”, and “test” conditions to be immediately relayed to a remote PC or to a mobile phone or hand-held by SMS (Short Message Service) and MMS (Multi Media Service), and via email. This really does beg the question: do we even need the control and indicating equipment we are currently used to?

What is most important is that the key performance objectives for fire detection need to be established covering such factors as reliability, availability and time-to-response. The equipment methodology to achieve the results is not the important issue. A British Standard meeting in the mid-1980s agreed that microprocessors were simply not reliable enough for fire detection control equipment and so should be banned from such equipment. A compromise was reached when a set of requirements for microprocessors was included in a fire detection control panel standard. How things have changed. Or have they?

Myth Four: fire control equipment should never be integrated with other systems

While agreeing that the base requirements for fire detection and control should never be compromised, the reality is that everything, including fire detection, security monitoring and control of ventilation and air conditioning will eventually be integrated. We just need to accept that technology is changing, and so must our ideas.

IFP

Paul Bryant is CEO of Kingfell Plc in London. He can be contacted by telephone on +44 (0)845 60 61 999 or via email at paulbryant@kingfell.com



Smoke means an immediate alarm.

SecuriRAS® ASD aspirating smoke detector with HD sensor

Securiton AG, Alarm and Security Systems
www.securiton.com, info@securiton.com
 A company of the Swiss Securitas Group

SECURITON
 For your safety

FIRERAY® 5000

The ultimate motorised auto-aligning beam detector



- Ease of Installation
- Ease of Set-Up
- Ease in Operation
- Easy!

- Modular Design
- Easifit First Fix System
- Ground Level Control
- Laser Assisted Alignment
- AutoOptimise Beam Alignment

- UniBeam Technology
- Contamination Compensation
- Building Shift Compensation
- Multi-Lingual Installation Guide



**FIRERAY® - The leading light
 in smoke detectors**



**FIRE
 FIGHTING
 ENTERPRISES**

9 Hunting Gate, Hitchin
 Hertfordshire SG4 0TJ

T +44 (0) 1462 444740

F +44 (0) 1462 444789

E sales@ffeuk.com

W www.ffeuk.com



ATTENTION

all 10.5m & 9.1m High Buildings
The Best Sprinkler to Install

THE N252 EC

Extended Coverage with No In-Rack Sprinklers
Huge Savings on Materials & Labour

Covering Solid-Pile, Palletized and Single, Double, Multiple Row Racks for
Class I-IV and Cartoned Unexpanded and Cartoned Expanded Plastics

Building Height: 9.1 m Storage Height: 7.6 m Coverage: 18 m²

K-200 ESFR	K-240 ESFR	K-360 ESFR	K-240 CMDA	Ultra K17 K-240	N252 EC K-240
9.3 m ²	9.3 m ²	9.3 m ²	9.3 m ²	9.3 m ²	10 m ²
3.4 bar	2.4 bar	15 psi-UL 20 psi-FM	1.6 bar (32.6 m/min)	1.5 bar	2.1 bar
12 sprs	12 sprs	12 sprs	186 m ²	15 sprs	7 sprs or 110 m ²
4550 L/min	4550 L/min	4550 L/min 5120 L/min	6600 L/min	4550 L/min	Sys. demand 3660 L/min
950 L/min HS	950 L/min HS	950 L/min HS	1900 L/min HS	1900 L/min HS	950 L/min HS

Building Height: 10.7 m Storage Height: 9.1 m Coverage: 13.5 m²

K-200 ESFR	K-240 ESFR	K-360 ESFR	N252 EC K-240
9.3 m ²	9.3 m ²	9.3 m ²	13.5 m ²
5.2 bar	3.6 bar	1.4 bar-UL 1.4 bar-FM	2.8 bar psi
12 sprs	12 sprs	12 sprs	9 sprs (min. of 110 m ²)
5510 L/min	5500 L/min	5120 L/min 5120 L/min	Sys. demand 5440 L/min
950 L/min HS	950 L/min HS	950 L/min HS	950 L/min HS

**PATENT
PENDING**

- Wet Pipe or Pre-action Systems (when they meet the equivalency of a wet system).
- Approved for Non-combustible Obstructed Construction.
- Refer to Reliable Bulletins 008 & 908 for more information.
- Refer to FM Global's Data Sheets 2-8N, 2-2 & 8-9 for installation and design of Control Mode Special Application (CMSA) and extended coverage sprinklers.

9/08 P/N 9999970372

Reliable®
TECHNOLOGY • QUALITY • SERVICE

For more information and to find your nearest location, see our website
www.reliablesprinkler.com

The Reliable Automatic Sprinkler Co., Inc.
Manufacturer & Distributor of Fire Protection Equipment

In-rack sprinklers: superior protection, but at a cost and a reduction in flexibility. © 2009 FM Global. Reprinted with permission. All rights reserved



Protecting Warehouses – One Sprinkler Size Fits All?

A sprinkler pipe dream?

By Brendan MacGrath

Manager, International Standards Group, FM Global

A truly flexible, one-size-fits-all, warehouse sprinkler system that's cheaper to install and provides better protection? A "pipe dream"? Well, for those who design, construct, own, lease and operate storage facilities, it's certainly a very attractive proposition.

Traditionally though, the message to the aforementioned stakeholders has been, "no; one size does not fit all!" and that sprinkler systems must be designed according to the many facility-specific conditions present at the time of its design. In addition, to ensure they remain capable of adequately protecting a facility during its life-time, periodic assessments are needed to assess the impact of any changes to the types of goods present and the way in which they are stored. When a sprinkler system needs to be adapted to such changes, the resulting modifications and reinforcements can result in significant costs and disruption to a warehouse's day-to-day operations.

This article examines the recent and possible future developments in sprinkler technology which are helping to make fire protection in storage

facilities a far easier and less-costly proposition. And, whilst these changes don't mean we've achieved the utopian "one size fits all" sprinkler system, the greater flexibility, ease-of-design, and lower costs that these advances allow certainly represent major progress towards this ideal.

The challenging past

Imagine a garden-furniture manufacturing company who teams up with several business partners, including a chain of DIY stores, a logistics firm and a property developer, to build a warehouse in Europe to store its products which will supply a developing market with great potential. The parties involved take a strategic decision to protect this important facility, key to achieving their business goals, with a fire sprinkler system. Now lets

Warehouses – the past: changes in goods and storage arrangements typically required sprinkler system modifications, often at considerable cost.
© 2009 FM Global.
Reprinted with permission. All rights reserved



also imagine this were twenty years ago. Chances are the goods would be mostly metal or wooden products stored in cardboard packaging. Data on the many variables needed to specify the system is gathered: ceiling height, the storage arrangements, aisle widths and the combustibility of the multiple products stored. Ultimately, the property insurance carrier and design consultant put forward a design based on a ceiling-only sprinkler system. Agreement and approval by all the stakeholders, including the local authorities, is obtained and the protection is installed. The warehouse is built and starts to operate successfully.

Five years later though, a new product line has been developed. Built from more fragile components such as glass, it requires the use of minor amounts of foamed-plastic protective packaging. In concert with the insurance company, it has been determined that this change renders the existing sprinkler system inadequate, thus placing the facility at significant risk. At appreciable cost, in-rack sprinklers are installed on the understanding that this new product line can now only be placed in these specially adapted racks. Another five years later and a new all-plastic weatherproof range of goods is launched. In order to ensure that the product can get to market, the sprinkler system needs to be upgraded once more, requiring more racks to be provided with a line of in-rack sprinklers. A further five years passes and, driven by environmentally-friendly market expectations, the cardboard packaging is replaced by recyclable plastic containers. Once again, the sprinkler system which was originally designed to protect metal and wood products in cardboard on wood pallets (a "Class III" product), needs to be upgraded to protect the higher commodity hazard of exposed unexpanded plastics. This is certainly not a happy story for anyone concerned – the inflexibility, the delays in product launches, the cost, the time etc. Without doubt, many of the stakeholders involved will have developed a negative perception of fire sprinkler systems. Some might understandably and rhetorically ask, "weren't these sprinklers supposed to support my business goals by protecting my premises against the fire hazard, not hamper them?"

Why so complicated?

So why did stories like this one happen? Basically, when rack storage systems were first developed in

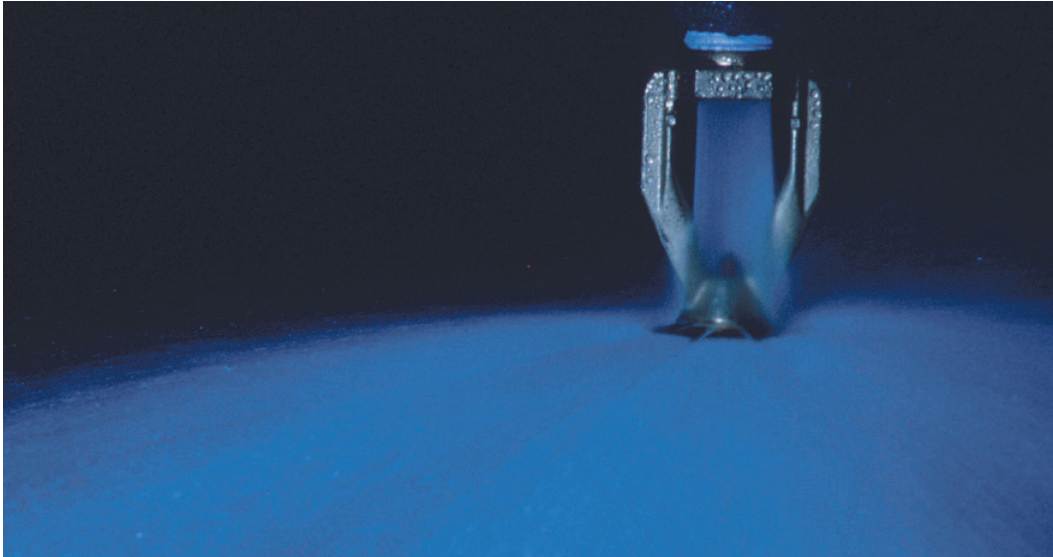
the 1960s, the only fire sprinklers available to researchers and those who developed standards, were smaller orifice size sprinklers. While such sprinklers had proven track records in manufacturing properties, their application to the far greater fire challenges posed by storage was another matter. Instead of the relatively low water pressures required to protect say, a textile mill, these same sprinklers were now required to operate at far higher pressures in order to protect high-piled storage of more combustible products. As a consequence, private water supplies consisting of a pump and tank were required, and/or

the installation of in-rack sprinkler systems, all of which came with a very significant price tag. There was, therefore, a strong economic argument and incentive for designing a sprinkler system requiring as low a pressure as possible in order to keep its cost to a minimum. This led to the development of design standards which required the consideration of multiple variables; eight classes of products, each representing an incrementally higher fire hazard, which in turn requires increased water pressure and therefore, greater cost. This resulted in complex design standards (FM Global's Storage Protection Data Sheet 8-9 contained approximately 37,000 individual protection options), which, as illustrated in the earlier example, can result in inflexibility and its costly consequences for a facility, even when undergoing relatively minor operational changes.

Simpler, cheaper and more versatile

In order to make fire sprinkler systems more cost-effective for the owner and versatile for the end-user, FM Global has made significant efforts to simplify the protection options contained in its Data Sheet 8-9 "Storage Of Class 1, 2, 3, 4 and Plastic Commodities". The changes made include simpler and cheaper in-rack systems, the elimination of interpolation and adjustments, the elimination of steel column protection and a simpler choice for the sprinkler temperature rating. FM Global's efforts don't stop here, however; in future editions of this standard we aim to see simpler design criteria which mostly only depend on the sprinkler type, the ceiling height and a broader range of commodity hazards. The previously mentioned 37,000 permutations could potentially be reduced by up to 90%.

Central to achieving these significant advances has been the research carried out by industry and the resulting development of innovative fire sprinkler products. These new types of sprinklers have greatly simplified the design and reduced the cost of fire protection. The introduction of Early Suppression Fast Response (ESFR) sprinklers in the 1990s (referred to nowadays by FM Global as Suppression Mode (SM) sprinklers) hailed the advent of this simplification and constituted a major step forward in the development towards a far more versatile and cost-effective sprinkler system. In one fell swoop, a SM sprinkler system



Suppression Mode ("ESFR") Sprinkler Heads: making sprinkler protection in warehouses more versatile, more effective, simpler and cheaper. © 2009 FM Global. Reprinted with permission. All rights reserved

design could protect all eight commodity classes, and in most cases without requiring in-rack sprinklers. Compared to the more traditional sprinkler options, water duration and fire hose demands were halved producing significant savings. Nevertheless, flow and pressure requirements were not insignificant, typically requiring substantial pumping capacity and the associated large diameter pipe work.

In the last few years, however, new fire sprinkler products are helping to further reduce the cost. These new products also provide justification for the simplification of the commodity classification system. Options such as low-pressure pendent storage sprinklers can protect commodities from classes I through IV combustibles such as cartoned plastics, at pressures up to 70% lower, thus reduc-

manufacturing operations in the region in order to supply both its local and international markets, and benefit from lower costs. These production and storage facilities, stretched and scattered across borders and time zones, form a global supply chain which needs to be highly resilient. Now, thanks to the advances in sprinkler technology which allow cheaper, more flexible and versatile fire protection, the provision of sprinkler protection in order to protect the company's future from the risk of fire, is a far more palatable option.

If we now translate these advantages to industry in general, they help to significantly reduce the cost of providing sprinkler protection. This decreased burden makes for a stronger cost-benefit case for their installation, which could ultimately have a bearing on building regulations.

Fire sprinkler systems can now be installed for as little as 1% of the overall cost of a new industrial establishment and at far less than the price of other building components e.g. carpeting.

ing the piping and water supply size. The overall cost savings could be as much as 20%. Furthermore, if this sprinkler is effective with more hazardous commodities at pressures as low as the sprinkler's minimum end head operating pressure, there is no longer any incentive or indeed reasonable possibility to sub-divide the less hazardous commodity classes as was required with the traditional sprinkler types.

Now let's imagine the garden furniture warehouse story is a current-day situation in an emerging-economy country where the indigenous market is experiencing an increasing demand for this kind of commodity. The fire sprinkler protection options available now include sprinklers which can provide adequate protection for the full range of commodities stored, and at a lower cost. This new facility has essentially been able to "leap-frog" from a position of no available options per local standards, directly to the latest R&D based technology, hence gaining very significant benefits from both a flexibility and cost standpoint.

Furthermore, the company elects to establish

Fire sprinkler systems can now be installed for as little as 1% of the overall cost of a new industrial establishment and at far less than the price of other building components e.g. carpeting. Fire sprinkler systems serve to protect the value which such facilities create, both for the enterprise and for society as a whole. Installing sprinklers can prevent the potentially catastrophic and headline-making fire incidents, such as the fire in a toy factory in Thailand in the 1990s which resulted in 188 fatalities and several hundred injured workers, and which can negatively impact a country or region's reputation as a safe, trustworthy and reliable place to do business.

In summary, in response to the need for solutions to the challenges faced by both business and those in the regulatory environment, the fire sprinkler industry continues to develop new and innovative products and standards which provide far more flexible and cheaper solutions. Solutions which make protecting a facility and the value it creates against the hazard of fire, an ever more attractive, viable and logical proposition.

IFP

FM Global is a leading commercial and industrial property insurance company and risk management specialist. If you have comments or questions on this article, please contact the author, **Brendan MacGrath**, Manager, International Standards Group at email: brendan.macgrath@fmglobal.com or Tel: +33.1.46.93.97.00

ONLY FIRETRACE IS FIRETRACE

OTHER TUBE-BASED SYSTEMS
CLAIM TO BE LIKE FIRETRACE.
THEY ARE NOT.



**INSIST ON GENUINE
FIRETRACE SYSTEMS
FOR PROVEN FIRE
SUPPRESSION.**

- + Only FIRETRACE INTERNATIONAL manufactured Systems offer extensively tested Firetrace branded solutions with listings and approvals[†] from CE, FM, UL, ULC and more than 25 other international agencies.
- + Only FIRETRACE INTERNATIONAL has 20 years of experience with more than 65,000 systems protecting equipment worldwide
- + Only Genuine FIRETRACE SYSTEMS have the tested and proven reliability you and your customers require

Never compromise your reputation by using impostor, untested and unapproved systems – be sure you are using genuine Firetrace.

FIRETRACE®
AUTOMATIC FIRE SUPPRESSION SYSTEMS

Call +44 (0) 1293 780390 (Europe, Middle East, Africa)
or +1 480 607 1218 (US and elsewhere) or e-mail info@firetrace.com
to see why Firetrace is the right solution for your fire protection needs.

www.firetrace.com
www.firetrace.eu



Firetrace® is a registered trademark of Firetrace USA, LLC / Firetrace Ltd. All unauthorized uses of the Firetrace trademark shall be prosecuted to the fullest extent permitted by the law.

* The Firetrec, FireDeTec, and Firetec brands are the property of their respective owners, and are not the property of Firetrace.

[†] Listings and Approvals vary by system and agent.

Firetrace® Chosen To Protect Delhi's New Mass Transit System

By Nick Grant

Firetrace International's
General Manager for
the EMEA region

Firetrace International has secured the second largest order ever placed in India for its FIRETRACE® automatic fire suppression system. The "micro-enclosure" fire detection and suppression technology is being used to protect vital electrical cabinets on the new Delhi Mass Rapid Transit System.

Delhi covers an area of 1,483 square kilometres and, with a population of 16.5 million that is expected to burgeon to 19 million by 2011, is one of the world's most populated metropolitan areas. To add to its already legendary congestion, in 2010 the city will host the Commonwealth Games. As a key part of the government's plan to alleviate the problem, the Delhi Mass Rapid Transit System – better known locally simply as the Delhi Metro – is being constructed and operated by the Delhi Metro Rail Corporation Limited.

The first phase of the project was completed in December 2005, and currently the system is a 67km three-line network with 62 underground, surface and elevated stations. The second phase is

passengers and staff, and to safeguard the network's assets and facilities, no doubt the more so since the recent terrorist attacks in Mumbai. Having carefully assessed the network's fire safety requirements, and invested heavily in sophisticated fire detection and alarm and security monitoring equipment, Metro's management decided that, in addition to these measures, dedicated protection was essential to safeguard vital enclosed electrical cabinets upon which the facilities' entire operational effectiveness depend.

The company recognised that these electrical enclosures are mission-critical and that their damage or destruction has the potential to go far beyond the cost of their replacement. It could quite possibly result in putting the network's vital

Having carefully assessed the network's fire safety requirements, and invested heavily in sophisticated fire detection and alarm and security monitoring equipment, Metro's management decided that, in addition to these measures, dedicated protection was essential to safeguard vital enclosed electrical cabinets upon which the facilities' entire operational effectiveness depend.

currently under construction with a target completion date of 2010 – in time for the Commonwealth Games. Its completion will add a further 128km of track and 79 stations. Phase Three will add 112km and Phase Four a further 107km of track that, when the project is completed in 2020, will see Delhi with a metro network longer than that of London Underground.

In keeping with mass transit operators around the world, Delhi Metro Rail Corporation Limited is acutely aware of the need to ensure the safety of

building management systems out of operation with an inevitable impact on passenger safety and service levels. So it was decided that the only way to avoid this occurring was to provide dedicated fast-response detection, fast agent discharge, and fast and effective suppression to minimise fire damage to the cabinets' internal components and prevent the spread of fire to adjoining cabinets.

The Rail Corporation acknowledged that, no matter how effective and sophisticated the network's main fire detection and alarm system is, it



would not respond fast enough. These systems are not designed to provide protection to the micro environments inside the cabinets. If a fire starts inside a cabinet, the interior is virtually certain to be engulfed in flames and extensively damaged, if not destroyed by the time sufficient smoke has escaped from the often-sealed electrical cabinet in sufficient concentration to activate a ceiling-mounted smoke or heat sensor or beam detector.

However, electrical cabinets are a challenging environment. They contain a host of components, such as internal sealed chambers, bus bars and cable alleys, and the internal layout often comprises any number of small sealed compartments. These are the high fire risk areas, so the fire detection system needs to be capable of being installed in each and every internal compartment if the fire is to be extinguished at the earliest possible stage and any damage or disruption kept to an absolute minimum.

Glass sprinkler bulb-type actuators were an option that was dismissed as they discharge only when sufficient heat has built up around the glass bulb to cause it to break. If the glass bulb happens to be positioned some distance from the source of the fire, there is the very real prospect of the cabinet's contents being seriously damaged before the extinguishing agent is deployed.

By comparison, FIRETRACE was found to

provide the essential detection and suppression characteristics that would ensure the effective protection of the cabinets. It provides around-the-clock protection, and is a "self-seeking"





stand-alone solution that is entirely self-contained and does not require an external power source. To date, 200 FIRETRACE systems have been dispatched to India for the Metro project, although this will eventually rise to 800 as work proceeds on the network.

In essence, the FIRETRACE system comprises an extinguishing agent cylinder that is attached to proprietary Firetrace Detection Tubing via a custom-engineered valve. This small-bore specially-developed polymer tubing acts as a linear pneumatic heat and flame detector that delivers the desired temperature-sensitive detection and delivery characteristics. It detects a fire at its source at any point along the entire length of the tube, ruptures and automatically releases the suppression agent, extinguishing the fire precisely where it starts and before it has had time to take hold.

The flexibility of the Firetrace Detection Tube enables it to be threaded around and throughout the cabinet's tightly-packed maze of compartments and components. It enters and leaves each compartment through the integral cable glands meaning that, in the vast majority of cases, drilling is unnecessary, so FIRETRACE does not compromise the IP (Ingress Protection) rating of the cabinet.

The tube can be installed throughout several conjoined electrical cabinets – subject to certain limits – enabling one FIRETRACE system to protect

several cabinets. However, the installation needs to have only sufficient gas to extinguish a fire in one cabinet, so the largest individual sealed cabinet in a row is used to calculate the quantity of extinguishing gas needed for the entire run of cabinets. This means that there is sufficient suppression agent to flood the whole cabinet, but it is discharged at the single hottest point, where the fire has started. The entire content of the cylinder is instantly discharged to fill the entire cabinet to prevent re-ignition and fire spread.

The Delhi Metro uses both the Firetrace Direct System and the Firetrace Indirect System. The Firetrace Direct System utilises the FIRETRACE tube as both the detection device and the suppressant delivery system. When the Firetrace Detection Tube detects a fire anywhere along its length it ruptures, forming an effective spray nozzle that automatically releases the entire contents of the cylinder. The Firetrace Indirect System uses the FIRETRACE tube as a detection and system activation device, but not for agent discharge. The

The installation needs to have only sufficient gas to extinguish a fire in one cabinet, so the largest individual sealed cabinet in a row is used to calculate the quantity of extinguishing gas needed for the entire run of cabinets.

rupturing of the tube results in a drop of pressure causing the indirect valve to activate. This diverts flow from the detection tube and the agent is discharged from the cylinder through diffuser nozzles, flooding the entire cabinet.

Detailed negotiations for the contract were overseen by Kuldeep Chauhan of Colimano Enterprises LLP, Firetrace International's principle trading partner for India, working closely with SVS Buildwell, the FIRETRACE master distributor for India. He says: "The Rail Corporation was acutely aware of the importance of relying only on a solution that met the highest international standards. Firetrace International's ISO 9001 approval and the UL (Underwriters Laboratories), FM (Factory Mutual) and NFPA (National Fire Protection Association) certification for the genuine FIRETRACE system were major factors in securing the Delhi Metro order in the face of competition from poor quality imitators with uncertified products."

He continues: "Being able to show a track record of 75,000 successful installations around the world and offer a wide selection of suppression agents also underpinned Firetrace International's status in the marketplace, as the Rail Corporation formed the firm opinion that competing suppliers offering only the widely-available CO₂ (carbon dioxide) suppressant were either commercially too weak or lacked the technical competence for the project."

IFP

Filling The Fire



The simple overview

Taking the general overview, Approved Document B – Fire safety 2006 is now published in two volumes. Volume 1 is for dwelling houses and Volume 2 for Buildings other than dwelling houses. Various changes have been introduced, such as new comments on the management of premises, the benefits available from product and installer certification schemes and the segregation of guidance for healthcare premises and schools, under HTM 05 Fire code and BB100 respectively as published by other government departments.

By Bill Parlour

Technical Officer,
Association for
Specialist Fire
Protection (ASFP)

Discerning readers may even have spotted the reintroduction of fire division of 'under floor voids' which had curiously disappeared from a previous version; the use of sprinklers in blocks of flats over 30m high; new guidance for the specification and installation of fire dampers and that a maximum compartment size has been added for un-sprinklered single storey warehouses.

Joining the dots

Most AD/B users of will have encountered the phrase *'Thus there is no obligation to adopt any particular solution contained in an Approved Document if you prefer to meet the relevant requirement*

(from Building Regulations) in some other way'.

Now this sounds fairly simple, but the in-built assumption that those choosing a different path will always do so in a responsible manner, may not be valid and may pose an increasing problem to fire safety of UK Limited.

Not surprisingly, the **Association for Specialist Fire Protection (ASFP)** is a robust supporter of a holistic approach to fire precautions in buildings, including the need to put out fire quickly and to keep any fire within the compartment of origin or outside the building, if that is where the fire started. But the Association does oppose trade off introduced without due evidence and do require

Not surprisingly, the Association for Specialist Fire Protection (ASFP) is a robust supporter of a holistic approach to fire precautions in buildings, including the need to put out fire quickly and to keep any fire within the compartment of origin or outside the building, if that is where the fire started.

Safety Toolbox?

that all assumptions are clearly laid out on the table, so that we can have reasonable confidence in any risk assessment.

Consequently, this overview does not intend to dwell on the 'main changes' as summarised on the inside cover of AD/B, but rather to think aloud about some of the real implications of some of the dispensations in this guidance when coupled with other changes. These especially include the amended role of fire authorities to retrospective enforcement duties for risk assessment under the Regulatory Reform (Fire Safety) Order 2005 and duties arising on contractors and designers from the new Building 16B as noted in the new Appendix G of AD/B.

or quality of work, or they risk losing future business.

- 2 Previously, for most buildings, the Building Control Officer's (BCO) completion certificate was coupled with the Fire Officers acceptance of the building – both steps acting together to suggest some sort of 'Permit for Occupation'.
- 3 Today, there is minimal, if any, fire authority input at pre-occupation stage.
- 4 BCOs cannot prevent occupation even when the fire precautions provided are incomplete or unsuitable!

The ASFP suggests that collectively these issues beckon future disaster.

Even if concern is raised, occupation can still

Today, fire authorities can only progressively apply retrospective enforcement of the new requirements to all the buildings in their sector, based on perceived risk to life. Their level of expectation, in case of fire, is not benefitting from a 'permit to occupy' for newly constructed buildings. The ASFP is equally cognizant of the need for such action.

We suggest there may be a growing faction who encourage unsatisfactory 'as built' constructions in the belief that they'll never be brought to court to explain their actions. Concern exists too, for fire safety design motivated solely by business and financial cost savings, especially when those responsible never even set foot on the building site in question!

The Association notes that the effectiveness of building control is often determined by the lowest bidder and that unscrupulous builders consider such lowest bidders as 'easy to avoid'. The end effect can be minimal control, if any. This is evidenced by the notorious Pacific Wharf development where the multi-storey building displayed little in the way of completed fire compartments or effective fire stopping, or fire resisting ductwork, or fire dampers, etc. All living units were directly linked with the basement car park.

We note government's position that (a) the duty of the 'responsible person' to make a risk assessment in most buildings, as eventually enforced by fire authorities, coupled together with (b) duties on the 'construction team' to provide fire safety information under the Building Regulation 16B, is enough. Unfortunately, experience of the real world leads the ASFP to a very different conclusion. Our reasoning is relatively simple.

- 1 Some installers are still being pressured into unwanted corners, that curtail the completion

occur until a fire authority places a prohibition notice against use of the building – but how many people will be at risk in the interval?

Today, fire authorities can only progressively apply retrospective enforcement of the new requirements to all the buildings in their sector, based on perceived risk to life. Their level of expectation, in case of fire, is not benefitting from a 'permit to occupy' for newly constructed buildings. The ASFP is equally cognizant of the need for such action.

The Association understands the need to avoid additional legislation when we've just tidied it all up, but all should recognise that this glaring gap still exists. The 'permit to occupy' stage is the one key stage when all stakeholders could usefully congregate, to agree that regulations have been properly complied with, to conclude financial matters and to formally hand over the Regulation 16B information pack to the intended owner/occupier. Without such surety the 'responsible person' could unwittingly jeopardise the life safety of persons within the scope of his risk assessment duties.

So, with due regard to all concerned, the ASFP does not call for a new tool box from government, but we do STRONGLY urge the need for 'an extra spanner' to make the mechanics job attainable. That 'spanner' is a formal requirement for issue of a 'permit to occupy' document.

Duct Insulation, the innovative
alternative to gypsum board enclosures.

A FyreWrap® fire-rated duct insulation system lets you wrap up your project in less time at lower cost. This lightweight, flexible material minimizes labor and installation time and saves valuable building space. FyreWrap Elite 1.5 Duct Insulation offers superior fire protection and design flexibility including:

- ONE product for all fire rated duct wrap applications (two hour ratings)
- Complies with 2006 IMC and UMC for grease duct enclosures with a two layer system
- Single layer system for ventilation air ducts
- Thin, lightweight, flexible blanket form allows easy installation
- Saves space when compared to traditional gypsum shaft enclosures
- Utilizes high temperature biosoluble insulation

A FyreWrap product specification in several formats is available at www.arcata.com; search using keywords Unifrax, FyreWrap, or www.unifrax.com. For additional information on FyreWrap Elite 1.5 or other products, certifications, code compliance, installation instructions or drawings, contact Unifrax Corporate Headquarters USA at 716-278-3888.



www.unifrax.com

Full scale testing under application conditions



Project Experience and New Codes Validate Grease Duct Wraps and Create Emerging Opportunities

Fire resistive grease duct enclosures including flexible grease duct wrap systems, have been commercialized for over 20 years. Demand for these alternate methods of fire protecting commercial kitchen exhaust ducts has increased as their technical merit was verified through full scale fire testing and application benefits defined through job site performance.

By Sarah Brewer

Group Product
Manager, Unifrax I LLC

Despite this multi-decade period of growing market acceptance, it is recent code changes that have provided the basis for even broader acceptance by industry design and regulatory professionals and is leading many to consider flexible duct wraps for other ventilation duct applications.

Grease duct wrap benefits

Prior to the year 2000, a few types of grease duct enclosure systems were already commercial and being used in the North American market, including field-applied grease duct enclosures and factory-built prefabricated grease ducts. Field-applied grease duct enclosures, better known as

Duct with complex geometry and close to other service items



flexible **grease duct wraps** are composed of high temperature fiber insulation blankets, typically encapsulated in a foil-scrim covering and supplied in rolls (a product form very familiar to the insulation industry). Upon introduction, designers and installers immediately recognized the potential space saving and labor saving benefits of utilizing this new method of fire protecting grease ducts. The *potential benefits* were translated in to *realized value* as industry professionals gained personal experience with grease duct wrap.

The most significant benefit flexible grease duct wraps provide is *building space savings*. The grease duct wrap can be applied directly to the duct surface and the systems are tested to permit installation at zero clearance to combustibles. This eliminates any need to incorporate additional air space between the duct and the enclosure. If a traditional shaft is utilized to protect the duct, mechanical codes mandate that 18" of air space (clearance) exist between the duct and a shaft enclosure, when constructed of combustible material. A 6" air space (clearance) must exist between the duct and the shaft enclosure when the enclosure is constructed of gypsum board. This clearance area cannot be utilized for any other

purpose (i.e. to run cable, pipe, etc.) and is lost space to an Architect or Engineer typing to maximize floor plan layouts or to Building Owners who desire to maximize billable real estate space. This space differential between grease duct wraps and gypsum board shafts is compounded when multiple ducts exist, since code requires each grease duct to be protected in a separate, dedicated enclosure.

The flexible, thin and lightweight duct wrap systems are inherently easy to handle and install. They conform to complex duct geometries and utilize less space which can resolve project issues when other building service items are in close proximity to the duct. This translates directly to contractor labor savings and timely project completion. The labor savings is significant enough that insulation contractors have been aggressively submitting project change orders requests in cases where the specification doesn't clearly define the use of grease duct wraps.

Utilizing standard grease duct construction in combination with field-applied flexible grease duct wrap provides the designer and installer with the most flexibility to address unexpected job site situations with fewer system changes or project delays. Factory-built grease ducts must be pre-engineered during the mechanical system design stage and precisely manufactured to project drawings so that parts arriving on-site match field conditions. If changes to the duct configuration are necessary, it could require ordering of alternate duct system parts and potential delays.

Flexible grease duct wraps are made from high temperature insulation blanket, some which have recommended operating temperatures of 2000°F and melting points that exceed 2300°F. As a result, they are capable of withstanding long term operational conditions of commercial kitchen exhaust duct systems, which can be up to 500°F for extended periods of time and grease fire conditions that approach 2000°F with a comfortable safety margin. This material property safety margin provides designers and code authorities a comfort level with using wraps for grease duct fire protection.

Generic insulation materials that have not specifically been tested for this application should

Table 1. Grease Duct Wrap Features & Benefits

Feature	Benefit
Zero Clearance to Combustibles	Saves building space versus shaft – no mandatory 6"–18" air space between duct and enclosure
Flexible blanket product form	Able to conform to complex duct configurations
Thin, lightweight system	Easy to handle and install, reducing labor
Laboratory listings	Independent verification of fire performance and reference to test results, installation details
Fire tested on duct assemblies	Proven performance under application conditions
Standard Duct Construction	Flexibility to address job site issues without special system parts or potential delays
Wrap applied directly on duct	Simplifies installation on horizontal duct runs vs. construction of a horizontal shaft
High temperature insulation	Capable of withstanding operational (500°F) and fire conditions (2000°F)
Foil-scrim encapsulated	Aids material handling, resists tearing and moisture absorption

Evaluation Service Criteria	Function
Internal Fire Test	Contain internal grease fire within the duct
Engulfment Fire Resistance Test (including Through-penetration Firestop Test)	Prevent external fire from entering duct or passing through annular space opening between duct and the wall or floor
Fire Resistance Wall Test	Establish equivalency to shaft wall (ICBO only)
Non-combustibility Test	Core insulation doesn't support combustion
Durability Test	Effect of temperature cycling on insulation
Other Property Tests	
Surface Burning Characteristics	Material doesn't exceed code prescribed flame spread and smoke developed ratings of 25/50

not be utilized. The operational temperature or use limit of many insulation materials is not high enough to withstand the fire exposure conditions of a kitchen grease fire. In fact, gypsum board used for most fire rated shafts is not recommended for applications with continuous elevated temperatures. One example of this is defined in the IMC, Section 602 covering Plenums, which does not permit the use of gypsum board if the air temperature exceeds 125°F. Due to the high temperature conditions and long operation time common for kitchen grease duct systems, it may be prudent for designers to specify grease duct wrap products that utilize insulation materials that can easily meet the application conditions without question.

The early years: establishing code compliance

During the time when alternate duct enclosure systems were emerging, mechanical engineers and contractors were able to obtain local approval of grease duct wraps from local code officials for individual projects based upon the Alternate Materials procedure permitted by the Code, often an onerous process. It takes time for new technologies to be widely embraced and accepted. The history behind grease duct wraps is no different. Work to obtain broader acceptance by incorporating new requirements within the code continued and the regulations evolved over time.

Regulation of commercial kitchen exhaust duct systems in North America most commonly falls under the International Mechanical Code (IMC), published by the International Code Council (ICC). (Additional recommended practices are captured in Standard NFPA 96, Ventilation Control and Fire Protection of Commercial Cooking Operations, which is typically referenced within project specifications). Requirements for commercial kitchen hood ventilation system ducts and exhaust equipment is located in Chapter 5: Duct Systems, Section 503.

The first edition of the IMC code was issued 2000, and Section 506.3.10 covered the application of Grease Duct Enclosures. Grease duct wraps and new types of grease duct enclosure systems were viewed as *alternates* to the code prescribed method of protection which was a fire rated shaft. Therefore, grease duct enclosures were incorporated in to the code, but categorized as an "Exception" and listed in a separate sub-paragraph. The language in the Exception paragraph that defines the performance criteria for grease duct enclosure systems was vague. This was due to the lack of a

North American standardized test method on fire resistive grease duct enclosures. Therefore, the test criterion was simply described as "...in accordance with a nationally recognized standard for such enclosure materials". (Similar language was incorporated in the Uniform Mechanical Code (UMC), published by the International Assn. of Plumbers and Mechanical Officials (IAPMO)). This provided the first ever basis for which Authorities Having Jurisdiction (AHJ's) could deem grease duct wrap systems *code compliant*, but still left the task of defining the appropriate performance criteria and the review of supporting manufacturer's product data to be done on a local basis.

To aid this process, the ICC Evaluation Service was established as an independent organization to conduct technical evaluations of building products, components, methods and materials. The evaluation process concludes with the issuance of a technical report called an Evaluation Service Report (ESR). Agencies use the ESR as guidance to help determine code compliance. Manufacturers use the ESR as evidence that their product meets the intent of the code. *This is especially useful if the product is new or the code requirements are not well defined.* ESR reports greatly aided the acceptance of grease duct wrap systems, especially since the 2000 and 2003 editions of the IMC code did not reference a fire test standard to which grease duct wrap systems should be tested.

For grease duct enclosures, ICC ES evaluations have been based upon acceptance criteria originally outlined by the Evaluation Service organizations for the three regional code bodies (SBCCI, BOCA, and ICBO) in existence prior to the formation of ICC and publication of the I-Codes. Differences between criteria developed by each resulted in two versions being used simultaneously within North America. The SBCCI criteria was based upon a few sections of UL1978 Standard for Grease Ducts, and resulted in qualification of single layer duct wrap systems, most commonly used in the Eastern USA. The ICBO criteria utilized a more severe internal fire test, which required two-layer duct wrap systems to qualify, and are most commonly used in the Western USA.

While the test criteria outlined by each region varied, all required the grease duct enclosure system to be tested under full scale *application conditions*. This type of application testing is not required for shafts. The technical basis for this is likely the fact the performance of shafts is verified with a fire test in a wall configuration. Therefore, when utilized as

Simple installation technique is easy to verify upon inspection



fire protection of grease ducts, four small shaft walls are constructed to enclose the duct. This configuration is assumed to provide equivalent protection to that of the flat, full size shaft wall. While code compliant, a fire rated shaft wall is *not a tested system* for grease duct enclosures.

Evolution of grease duct enclosure code requirements

As grease duct enclosure systems continued to gain acceptance, there was an industry movement to develop a “nationally recognized test standard” specifically for grease duct enclosures that would harmonize the performance criteria and be acceptable for inclusion in the code(s). The culmination of this effort was ASTM E 2336 Standard Test Methods for Fire Resistant Grease Duct Enclosure Systems, published in May 2004. The performance criteria mirrors ICBO AC101 and therefore results in two-layer grease duct wrap systems. ASTM E 2336 can also be used to evaluate factory-built prefabricated grease ducts as well as UL 2221 Standard for Tests for Fire Resistant Grease Duct Enclosure Assemblies, which was developed by UL specifically for factory-built grease ducts and utilizes similar performance criteria.

The new test standards were quickly embraced by industry and incorporated in the 2006 IMC. The words “...in accordance with a nationally recognized standard for such enclosure materials” were simply replaced with “in accordance with ASTM E 2336” or “in accordance with UL 2221”. Similar language was also incorporated in to the 2004 Edition of NFPA 96. While change was made to only a few words, incorporation of the fire test criteria directly in the code has had a widespread impact on the market. There will be a transition period during which local jurisdictions are adopting the 2006 Edition of IMC when it will be unclear whether projects previously designed and bid under older codes will now have to comply with the newest performance criteria. All stakeholders in the project should be diligent to clarify with the local AHJ as to what criteria and duct wrap system are required. In some cases, work order changes for the duct wrap material may be necessary.

2006 IMC – Impact on Market:

- Harmonizes performance criteria across the USA

- Two-layer grease duct wrap systems used to comply with 2006 IMC/UMC
- Eliminates or reduces the need for an ESR report
- Design Listings from independent test labs suffice as test evidence and code compliance
- Contractors must be careful to install the grease duct wrap system appropriate for the edition of the IMC under which the project was permitted (pre-2006 vs. 2006); clarify with local AHJ before installing any single-layer UL1978 system.
- Engineers must plan adequate space for enclosure systems, especially as grease duct sizes have gotten larger.

In recent years, *alternate* grease duct enclosure systems have become widely accepted by regulatory authorities, and so, the evolution of the code continued. In the 2009 Edition of IMC due for publication in March, Section 506.3.10 has been reorganized in to three sections: shafts, field-fabricated grease duct enclosures, and factory-built grease ducts. This format eliminates the *Exception* designation for alternate grease duct enclosure systems and lists them as EQUIVALENT to fire rated shafts as a recognized method of fire protecting kitchen exhaust grease ducts. This code achievement is a significant milestone for the grease duct enclosure industry and for grease duct wraps.

Emerging opportunities for duct wraps

The space savings, labor savings and design flexibility benefits offered by flexible *grease* duct wraps can also be realized for other *ventilation* duct systems that require fire protection. Potential duct types include: hazardous exhaust ducts; life safety ducts – including stairwell and elevator pressurization ducts and smoke extract ducts; toilet exhaust ducts, commercial dryer exhaust ducts and trash and linen chutes.

Industry acceptance of duct wraps for non-grease ventilation ducts is at a similar stage to where grease duct wraps were prior to the year 2000. Approvals by local AHJ's are already being granted based upon the Alternate Method procedure. Independent laboratory design listings are available that can demonstrate fire performance that meets the intent of the code. The specific value proposition duct wraps offer each duct type is in the process of being defined based upon recent project experiences. In addition, work is underway to develop appropriate fire performance criteria including a draft ASTM fire test standard for fire resistant ventilation duct systems. Once a “nationally recognized standard” is available, potential code change proposals to include *alternate* duct enclosures, including duct wrap systems can be considered for certain situations that require fire protected ducts.

Project testimonials and new codes have combined to validate grease duct wraps as a preferred method of fire protecting kitchen exhaust grease ducts. The experiences gained through the evolution of the grease duct enclosure application will guide the industry for ventilation ducts and hopefully shorten the time frame required to complete the process. If the widespread acceptance of the grease duct wraps by designers, installers and inspectors is any indication, then the future is bright for emerging opportunities for ventilation duct wraps.

IFP

Sarah Brewer is a Group Product Manager for Unifrax I LLC with over 20 years experience in various engineering and marketing positions supporting the North American passive fire protection business. She is member of the ASTM E05 Task Group on Duct Enclosures, UL Standards Technical Committee on Grease Ducts and current President of the International Firestop Council (IFC) and Chairperson of its Duct Committee. She is also a member of the National Fire Protection Association (NFPA) and Society of Fire Protection Engineers (SFPE).

THERE IS MORE THAN ONE WAY TO SUPPRESS A FIRE.



THE EXPERTS AT FIKE SELECT ONLY THE BEST.



ECARO-25®
Exceptional, cost-effective
clean agent fire protection.
Dupont™ FE-25™



PROINERT®
Unique inert gas valve
yields significant system
and installation savings.



DuPont™ FM-200®
Waterless clean agent fire
suppression solutions for the
modern workspace — only
from DuPont.

Fike doesn't just offer protection. We develop technologically advanced fire suppression systems that protect your bottom line, as well as your facility and assets. **ECARO-25**, **PROINERT**, **DuPont™ FM-200®** are USGBC LEED® recognized.

At Fike, we're known for:

- Innovative, reliable products
- Fast, responsive service
- Creating a partnership with our customers

**FIKE HAS THE MOST COST-EFFECTIVE, INNOVATIVE
FIRE SUPPRESSION SOLUTIONS AVAILABLE.**

Fike®

WWW.FIKE.COM
1-866-758-6004

Cleared For Takeoff



Arguably the largest single HYGOOD® FM-200® fixed fire suppression order ever placed in Turkey is safeguarding the country's new multi-million-Euro air traffic management system.

By John Allen

EMEA Marketing
Director, Tyco Fire
Suppression & Building
Products

Turkey has 982,286km² of airspace, and the country has long been considered to be at the crossroad between Europe and Asia. It is also strategically positioned between Africa and the affluent northern hemisphere countries and is on the very doorstep of the Middle East. Hardly surprising then that the Turkish civil aviation sector is growing far faster than the European average growth rate. In 2007, 890,087 flights were controlled over Turkish airspace, which was an increase of more than 70,000 flights over the previous year.

Turkey's current radar system was installed in 1989, but had become outdated and unable to meet the needs of the country's increasing air traffic management demands. An even greater problem faced by the country was Turkey's lack of what is known as an STCA or Short Term Conflict Alert system. This is an automated warning system for air traffic controllers that gives them a 90-second alert to potential aircraft-to-aircraft collisions. This warning time is intended to be sufficient to allow the controller to issue appropriate instructions to avoid a collision. Significantly – particularly with its aspiration to be accepted for membership of the EU – Turkey was the only European country that did not have such a system, which Eurocontrol, the European organisation for the safety of air navigation, has declared to be obligatory.

To overcome these challenges, DHMI, the General Directorate of State Airports Authority in

Turkey, embarked on a programme that will provide the country with a world-class air traffic management system for the next 20 years. Its multi-million-Euro SMART, or Systematic Modernization of Air Traffic Management Resources in Turkey, project will – when completed by the end of this year – provide Turkey with one of the most advanced air traffic control management systems in the world. It will also enable Turkey to act as a regional hub, linking Turkey's nine neighbouring countries to the Eurocontrol Centre in Brussels. This was created to harmonise and integrate air navigation services throughout Europe, aiming at the creation of a uniform air traffic management system for both civil and military users.

Smart safety

With, no doubt, an eye on the potential further growth in both passenger numbers and airfreight if the country finally achieves EU membership, the General Directorate of State Airports Authority's objective is to maintain its level of performance and continuously improve the quality of its services. It also aims to steadily develop its position in Europe and achieve a leading position in the provision of air navigation services in the region. Safety is therefore a major concern.

The SMART project called for the construction of 63,700m² of new facilities at a number of the country's major airports to house data rooms, critical plant rooms and information recovery

keoff

centres. These include 41,000m² of new buildings for an area control centre [ATC] and approach [APP] air traffic control facilities at Esenboğa International Airport in Ankara. This will enable all of Turkey's airspace to be controlled from the capital's airport. Other new facilities include: a 6,700m² area control centre, approach building and tower at Ercan Airport in northern Cyprus; a 6,300m² approach building at Adnan Menderes Airport at Izmir on the western Aegean Sea coast; a 2,700m² approach building at Dalaman Airport on the southern Aegean coast; and a 700m² approach building at Atatürk International Airport at Istanbul.

In total there are over 150 control rooms located across the five sites. This includes on-route approach centre control rooms, the approach control centres [APC], data rooms, critical plant rooms and information recovery centres, all of which have to provide service-critical, uninterrupted around-the-clock performance. Providing these facilities with the essential fire safety required the installation of several ANSUL® high-pressure CO₂ [Carbon Dioxide] total flooding systems in the numerous unoccupied areas, and HYGOOD® FM-200® fixed gaseous, total flooding systems in the occupied areas. In all probability, this was the largest single fixed fire suppression system contract ever embarked upon in Turkey, and certainly the largest single order ever placed in the country for HYGOOD FM-200.

Integrated, single-source solution

All of these fire safety systems were installed by the Turkish engineering procurement and contracting services company, Palmet Engineering, which was responsible for the engineering design, supply and supervision of all of the fire protection systems. Tyco Fire Suppression & Building Products supplied Palmet with over 28 tonnes of HYGOOD FM-200 agent from the UK and ten tonnes of ANSUL HPCO₂ from the USA. The installations are designed in compliance with current NFPA [National Fire Protection Association] design codes and practices and the FM-200 system carries Underwriters Laboratories [UL] listing and Factory Mutual [FM] approval. Both the CO₂ and FM-200 installations are supported and controlled by the latest Pyro-chem detection and activation equipment that was supplied from the USA.

Palmet also installed a total of 1,200 fire detectors, 150 separate fire detection and extinguishing panels, fire hose cabinets, sprinklers and fire pumps.



CO₂ protection for unoccupied spaces

The decision to use ANSUL CO₂ was based on the suppressant's global record for providing reliable total flooding protection for unoccupied spaces. It is an efficient, versatile and cost-effective agent that, when discharged, leaves nothing behind to damage or impede the performance of the airports' sensitive IT and communications equipment. With no agent clean-up required, any affected area at the five airports can be up and running and playing its part protecting Turkey's air space again in the shortest possible time.

The CO₂ gas is stored under pressure and is piped to the protected room or enclosure, where it is discharged in an emergency via a network of piping and strategically located nozzles. On release, it discharges as a colourless, odourless, electrically non-conductive, and non-corrosive gas that quickly floods the entire protected area and extinguishes the fire.

This permeation of the CO₂ gas, coupled with it being one-and-a-half times heavier than air, makes it ideal for suppressing fires in the ducts and voids beneath raised floors and cable vaults that are commonly used to house extensive cabling. While this cabling rarely initiates a fire, particularly if it is carefully selected for its fire performance, it can represent a fire hazard that may be difficult or time-consuming to locate, with the potential to



cause serious damage if it is not extinguished quickly.

However, CO₂ is not a universal solution, and is certainly not suitable for the air traffic control centres' many occupied areas, as the discharge of CO₂ in fire extinguishing concentrations would be lethal to room occupants. Because of this, it was also essential for Palmet Engineering and the buildings' designers to take steps to ensure that all of the CO₂ flooded areas could be adequately ventilated after discharge to prevent accidental exposure of airport personnel to dangerous levels of CO₂ when investigating the cause of the discharge.

Turkey's largest FM-200 contract

The decision to use HYGGOOD FM-200 for the occupied areas was based on a number of factors. First, it is the most successful of the early chemical replacements for Halon 1301; an agent that has been used to successfully protect tens of thousands of high-technology centres around the world. At the latest count, it has been entrusted to safeguard over one hundred thousand applications

difference between a safe flight and a catastrophic disaster. FM-200 systems reach their extinguishing levels in ten seconds or less, snuffing-out ordinary combustible, electrical, and flammable liquid fires before they cause any significant damage. While this means less damage, lower repair costs, and represents a massive improvement in the safety of air traffic control staff, perhaps the most significant consequence is the reduced downtime.

The HYGGOOD FM-200 agent is stored in cylinders as a liquid, pressurised with nitrogen, saving huge amounts of storage space. In fact, for the same amount of protection, FM-200 systems take up to significantly less storage space than a comparable CO₂ and inert gas installation. When discharged, the liquid flows through a piping network into the particular airport's protected area, where it vaporises to extinguish the fire largely through heat absorption.

Significantly, there is no risk of thermal shock damage to the centres' delicate electronic equipment and FM-200 is electrically non-conductive and non-corrosive. Additionally, it leaves no oily residue or deposits to damage software, data files

Following a fire, the gas may be dispersed through natural ventilation, which is made possible by FM-200's freedom from any toxic side effects and – because it contains neither bromine nor chlorine – its zero ozone depletion characteristics.

in more than 70 countries. Its use as a fire suppressant is not inhibited either by the Montreal Protocol or the Kyoto Protocol. Indeed, it is a clean agent that belongs to a class of compounds that was introduced specifically to facilitate the phase-out of ozone depleting gases, such as the now-banned Halon 1301.

At its design concentration, FM-200 does not sufficiently deplete the oxygen level to a point where it is unsafe for occupants to remain in the room. Following a fire, the gas may be dispersed through natural ventilation, which is made possible by FM-200's freedom from any toxic side effects and – because it contains neither bromine nor chlorine – its zero ozone depletion characteristics.

The speed in which it extinguishes a fire was a major factor in its selection by DHMI for the new air traffic control centres, where – in an emergency – seconds can have the potential to make the

or communications equipment so clean-up operations are unnecessary following an installation discharge. This is a far cry from the aftermath of the discharge of, say, a water, foam or dry chemical system where the extinguishant has the potential to do more damage than the fire itself.

Commenting on the SMART fire protection solutions, a spokesperson for Istanbul-based Palmet Engineering said: "Fixed gaseous fire protection systems are frequently used to protect areas defined as 'mission critical' or 'business critical', but it is hard to conceive of another application where the word 'critical' is so accurately applied." He continued: "It is absolutely imperative that the fire safety solutions at these five airports work exactly as they have been designed and installed; that they deliver a totally integrated solution. That is why we chose to recommend to the DHMI that the various systems were sourced from a single supplier."

IFP

John Allen is EMEA Marketing Director for Tyco Fire Suppression & Building Products

Retrofit with SEVO 1230

Clean Agent Fire Suppression Systems

Designed with **3M** Novec™ 1230



Fire Protection Fluid

Retrofit with SEVO 1230 Systems:

- Utilize existing piping
- 1 to 1 cylinder/nozzle replacement

• Existing Halon 1301 Systems

• Existing HFCs Systems

& High Global Warming Materials

No other halogenated alternative can match:

- Zero Ozone Depletion
- Atmospheric Lifetime of 5 days
- Global Warming Potential 1
- Life Safety Margin 67-150%
- 20 year environmental warranty



www.sevosystems.com
info@sevosystems.com
Phone: 913.677.1112

SEVO  **SYSTEMS**
The Safe Environmental Choice

14824 W. 107th Street
Lenexa, KS
USA, 66215

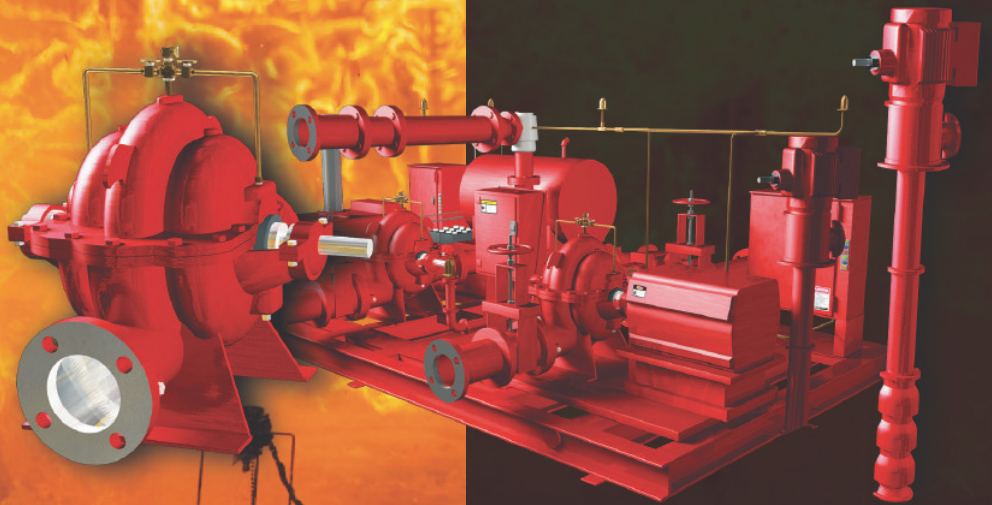
Extinguish the Fear.

It only takes a spark. In less than a minute, an uneventful day can turn into an unbelievable nightmare.

But with Sentinel™ Series fire suppression pumps on guard, you can be confident that your front line defense will respond the instant it's needed...every time. Patterson, a world-class company with ISO 9000 certification, has built a reputation over the last century for delivering quality, dependable products backed by hands-on training and personal service and support. From initial design concepts through computer-controlled machined production, Patterson engineers optimize every Sentinel product for reliable performance and durability. So whether you're protecting a small commercial application or a large industrial complex with wet pits, station Sentinel Series fire suppression pumps as your front line defenders. Extinguish the fear...with Sentinel.

SENTINEL™ SERIES FIRE SUPPRESSION PUMPS

Choose from a complete line of pumps and accessories: Horizontal Split Case, Vertical In-Line, Vertical Turbine, End Suction and Pre-Pac® custom-engineered pre-packaged systems. Contact Patterson today!



PATTERSON PUMP IRELAND LIMITED

A Subsidiary of Patterson Pump Company U.S.A.
Unit 14, Mullingar Business Park • Mullingar, Co. Westmeath, Ireland
Tel.: 353 44 934 7078 • FAX: 353 44 934 7896
E-mail: rpelot@pattersonpumps.com

www.ie.pattersonpumps.com

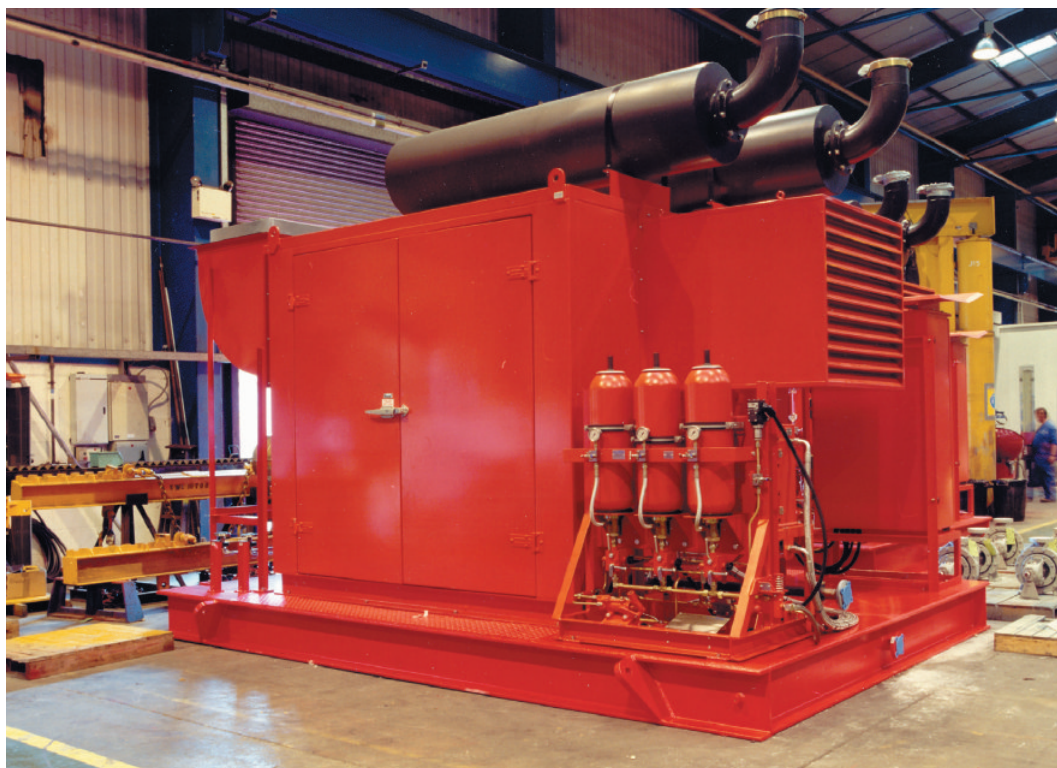
460383

Pumping Technology for Tomorrow's World
Patterson®

© 2008 Patterson Pump Company



Typical Packaged Fire Pump designed and built by SPP Pumps



Pump House Packages

By Alex Playfair

General Manager,
Industrial Fire Division,
SPP Pumps Ltd

As project schedules in the construction industry reduce and the need for bespoke fire water supplies grow, pump house packages are becoming an even more crucial part of the fire protection installation programme.

The concept of factory produced pump houses that are pre-manufactured and dropped on to a base, ready for immediate operation, is helping to bring project programmes in on time. The package can meet the relevant listing and approval standards and cover all of the flows and pressures needed to satisfy the system demands. All Industrial and commercial applications can utilise this solution. Schools, supermarkets, warehouses, factories and power plants all benefit from this type of water supply. Electric and diesel drive, horizontal or vertical pumps, whatever type of pump the application demands can be accommodated in the packaged pump house. If required, priming facilities for suction lift horizontal packages can be added and connected for use, if suction lift supply proves necessary and is accepted by the relevant approvals body.

The concept can help the fire system installation contractor in many ways. It helps the installer channel resource from the control valves through to the sprinkler heads, hydrants or monitors. The package can be custom designed to incorporate the requirements of the client and to be in line with many needs of the installation site.

The availability of a product which enables the

installer to outsource the pump house part of the contract can provide a valuable helping hand. The package popularity has also gained momentum with the ease of design, allowing the contractor to leave it in the hands of the supplier. The brick built pump house can be difficult to manage with its need for hands-on co-ordination of the various trades needed to bring together the project. The packaged pump house is a drop down, connect up product that has pumps, pipe work, heating, lighting, ventilation, test facilities and in most cases its own sprinkler system. The whole unit is fully assembled and tested prior to dispatch. Contractors, approval bodies, listing authorities, consultants, end users and insurers have the opportunity to inspect and witness test the unit under factory conditions.

Duty is proven under factory conditions with the actual test equipment that will be used when the package is run on site, the pump having already been proven with calibrated factory test equipment. In most cases it will have already been string tested before installation in the pump house with the panel and project driver. This results in on-site test proving issues being a thing of the past as any issues will be resolved before the package arrives on site.

These SPP Pump Houses are designed to handle 5000gpm



There are a number of ways to produce the enclosure. The methods of construction include fabricated steel and composite panels, but other types of enclosures are used, including glass reinforced plastic (GRP). The composite panel cladded method of producing a package requires a steel frame to be constructed then cladding is attached in segments around the frame. Another is for steel construction to be designed then the house and base fabricated in one unit. The third popular method for a steel manufactured unit is to utilise an ISO container and modify it to be used as the enclosure. These designs allow the pipework to be supported from the construction or frame. The way of producing the GRP unit is to construct the pump house parts on to a base, supporting the pipework on frames, such as A frames, from the base and then to drop over a GRP enclosure on

site. It is important to note that the construction has to withstand fire ratings of the relevant standards demanded by the regulations.

The most popular way of fitting the floor is to install a checker-plate design that gives the user ease of access throughout the package.

The enclosures can be designed to meet the demanding noise reduction requirements of some specifications. Insulation in the walls of the enclosure combined with critical grade exhaust silencers can allow installation of diesel engine driven pumps in areas with a high sensitivity to noise.

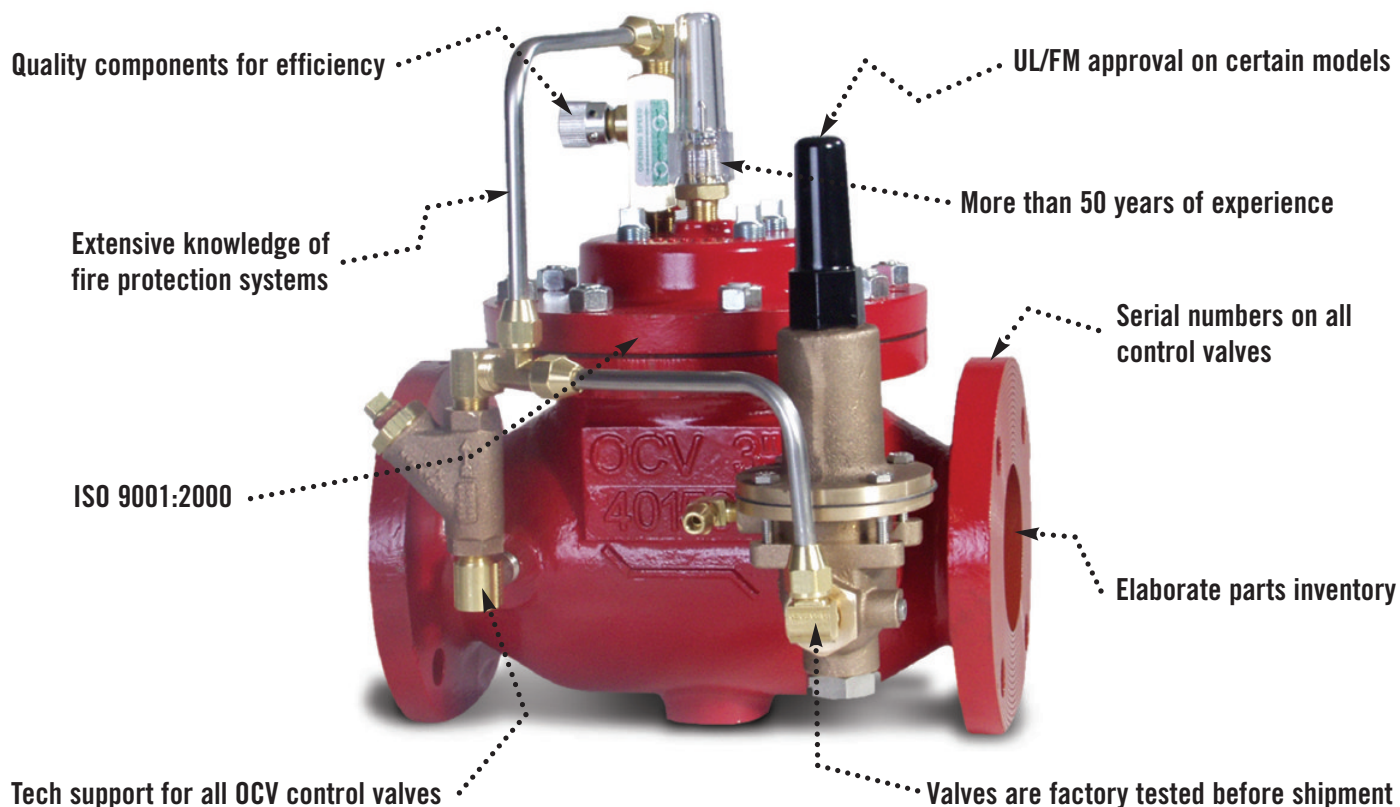
The use of acoustic enclosures or pre packaged pump house packages is becoming increasingly common in the Oil and Gas Industry. These are installed offshore on platform decks or FPSO machinery spaces as well as onshore in hazardous areas of refineries and storage facilities. These packages are designed to meet demanding project specifications in terms of noise reduction, hazardous area requirements and construction. This market usually requires the fabricated steel method of construction with welding standard standards such as ASME IX commonly specified. Stainless steel is also becoming more popular to increase the corrosion resistance of the unit. Space is a major consideration offshore, so these units have to be as compact as possible but still allow sufficient space for access, maintenance and pump or engine removal. The use of removable panels, 180 deg opening doors and lifting facilities all have to be considered.

The normal target noise level from an Oil and Gas industry enclosure or pump house would be 85dbA at 1m. However, as well as pure noise attenuation, the enclosures can be designed to meet stringent fire resistance criteria such as A0 or even H60 or H120 ratings for hydrocarbon fires. This can be achieved in various ways such as the use of intumescent coatings or thermal insulation. It is also necessary to install fire detection and fire



*Fabricated steel
Packaged Pump House
showing SPP pump
configuration*

WHAT YOU GET IS EVERYTHING YOU *DON'T* SEE.



OCV takes its commitment to quality seriously. From the drawing board to your fire protection system, OCV uses only quality materials to ensure maximum efficiency, performance and safety. We are dedicated to protecting your system and the environment so each valve is manufactured through an ISO registered process and includes a water-tight seal to prevent waste. Our fire valves come in a range of materials in order to address your specific application. Choose from Ductile Iron, Bronze, Stainless Steel or Nickel Aluminum Bronze. We've been perfecting this process for over 50 years, so you can be confident that your valve will perform to its exact specification.

7400 East 42nd Place Tulsa, OK 74145 • P:918.627.1942 • 1.888.628.8258 • F:918.622.8916 • www.controlvalves.com



Global performance. **Personal** touch.



This SPP pre-fabricated steel Pump House greatly reduced on site installation time



protection systems. Detection takes and protection would utilise systems such as water mist, Hi Fog or CO₂. As well as stringent noise and construction considerations, the electrical installations are very often ATEX certified for use in hazardous areas.

The other major benefit of the pre packaged Oil and Gas industry pump houses in particular is the reduction of site installation work. This is a major consideration in the increasingly remote areas that these packages are operating in. The packages can be pre fabricated and delivered to site that

requires an absolute minimum of on site hook up. This is a major cost saving for both the contractor and the end user.

Transportation from the factory to the site is a major consideration when planning the method of construction for the package. Although the vast majority of the configurations can be shipped as one final unit on the back of the road transportation, one option that can be considered with the large multiple pump package is to design the package so that it is assembled in one pump house unit,

GALILEO

GAS FUNCTIONAL SAFETY CONTROL PANELS

HEAVY INDUSTRIAL, HIGH SAFETY APPLICATIONS

SMS 256 IN 512 OUT

S32I 32 ADDRESSABLE

S8 8 IN 8 OUT

NOW

SIL3 - Capability

(IEC 60079-29-3)

APPROVED

CYBER-SMART 3G-LISA IR

THE INTELLIGENT GAS TRANSMITTERS RANGE

SIL & ATEX & ONE MAN CALIBRATION

CYBER

SMS sil multi sensors

SSD sil single display

SSI sil single IrDA

LISA

IRD - IRI

SMART

3GD - 3GI

WITH IRIS® INSIDE.

THE IR TECHNOLOGY AT THE PELLISTOR PRICE



sensitron
GAS EVOLUTION
SAFETY AND SECURITY FOR A BETTER LIFE

A YOUNG COMPANY WITH GREAT IDEAS

SENSITRON s.r.l. 20010 CORNAREDO (MI) - V.LE DELLA REPUBBLICA, 48 - ITALY - TEL. ++39 02.93548155 - FAX ++39 02.93548089
http://www.sensitron.it - e-mail: sales@sensitron.it - SOLE DISTRIBUTORS WORLDWIDE; OEM PRODUCTION AVAILABLE



Pump House internals showing SPP pump configuration

then broken down into sections, to be reassembled on the project site. This has been accomplished many times in the past and takes minimal time to reassemble and seal, with the right design.

Pump packages installed into ISO containers have many benefits with transportation. This type of design lends itself to ease of movement and the ISO container design can be delivered over thousands of miles and to remote sites. End users have specified this type of enclosure with the idea of moving the plant from one installation to another if the need becomes necessary.

Another example of the flexibility of the unit is that other parts of the fire system can be installed in the purpose built pump house. In the past foam extinguishing packages, industrial water supply pumps and system monitoring panels have been added to the house, to name but a few.

Generally the paint colour of the house can be supplied to suit any site requirements.

Packages are designed to incorporate necessary working areas for the regular maintenance of the packages. Allowances can also be made for major overhauls of any equipment. Cranes can be incorporated in the pump house package itself or removable roof panels can be installed to allow the use of portable cranes.

The work required to make the packages operational on site is minimal. A pre-prepared plinth to mount the unit, connection to an approved water supply and an incoming electric supply is all that is needed to put the package on line.

The site can be commissioned by experienced, qualified engineers to make a final check and place the system in operation.

IFP



Container Pump House





NEW!
FD4e diesel controller
FM Approved, UL Listed

CONTROL PANEL MANUFACTURERS

Diesel Engine Controllers
In a wide range of applications including Fire Pump, Industrial Pump and Gen-set.

Electric Motor Controllers
For all applications using direct on line, star delta, auto transformer and variable frequency drive starting methods. Up to 11kV. All produced to various worldwide standards including LPC, UL and FM.

Power Distribution Equipment
Including HV and LV panel boards, sub-distribution, switch boards, battery tripping units and packaged sub-stations.

After Sales Service
We offer a complete after sales service including:
 Commissioning
 Maintenance Contracts
 On-site Repairs
 Spare Parts

Metron Eledyne Ltd
 18 Autumn Park, Dysart Road, Grantham
 Lincs NG31 7DD, United Kingdom
 Tel: +44 (0)1476 516120 Fax: +44 (0) 1476 516121
 E-mail: info@metroneledyne.co.uk
 Web: www.metroneledyne.co.uk

Safety By Dete



Whether offshore, on board ship or in industry, gas detection systems are being used to prevent fires and explosions as well as avoiding pollution and ensuring safe, breathable air. Fixed gas detection systems are designed to protect plant and personnel, as opposed to personal, handheld gas detectors that provide single or multi-gas protection for individuals on the move.

By Steve Robinson

Sales and Marketing,
Draeger Safety Gas
Detection Systems

Fixed gas detection

Providing total coverage around the plant, fixed systems measure flammable, explosive and toxic hazards on a permanent basis. Often referred to as failsafe or intrinsically safe, they can instigate a counter measure as soon as a predetermined gas concentration level is reached and, if the gas concentration continues to rise, can automatically switch off all apotential ignition sources, identify a toxic release, and warn of these risks, even in unoccupied areas.

Point detectors

Installed in critical locations that are prone to potential leakage such as flanges, pumps or compressors, point detectors can also be strategically placed to provide general air monitoring or to monitor the perimeter or "fence line" against migration of escape to neighbours. Point detectors can be used to measure both toxic and flammable gases.

The transmitters are enclosed in a rugged housing, usually made of stainless steel, and generate an output signal proportional to the concentration of the gas in question. This signal, which is transmitted either as analogue using 4-20mA technology or digitally via a HART bus system or RS interface, is received in a control

room. The data is immediately displayed, stored and evaluated by a control system. If alarm thresholds have been reached, the controller will then generate an alarm function such as valve closure, process shutdown or a company-wide alarm.

Open path

Designed for use with flammable gases, open path systems consist of a transmitter that projects a beam of infra-red (IR) light towards a separate receiver where the flammable gas concentration is measured along a line of sight over large distances. This measures the amount of gas present in the atmosphere and directly indicates the hazard of a gas cloud – the more gas there is, the more severe the explosion is likely to be.

As the distance between transmitter and receiver can be as far as 200m, a single open path system can replace several point detectors. Requiring less cabling than multiple point detectors, open path systems can also bring further cost savings in terms of reduced maintenance costs. They also bring benefits when considering environmental conditions. Immune to the effects of the sun, flare radiation and common contaminants, for instance, the Polytron Pulsar Open Path Infra Red Hydrocarbon Detector has built-in directional guidance for ease of alignment and heated optics to

ction

eliminate snow, icing and condensation, ensuring accurate measurement at all times.

In some situations, point detectors can be used in combination with open path technology. A grid of point detectors can easily locate a leak, for instance, where the open path system will provide greater coverage across a wider area.

Gas aspirators

Frequently used in duct monitoring applications for detecting smoke, gas aspirators can also detect flammable and toxic gas. They are ideal where the detector would be inaccessible for calibration and maintenance or where the location takes the field device outside its normal working parameters. A recent example of their use can be found in a custom designed solution that included the supply of over 30 aspirator systems for the detection of flammable gas, toxic gas and smoke in the HVAC inlet ductwork on a number of refinery control buildings and workshops. Located in a hazardous area of the plant, the control buildings are protected by over-pressurised air drawn from a non-hazardous area. Designed, supplied and installed by Draeger, the aspirator systems are being used to detect any gas or smoke entering the inlet ductwork. This, in turn, ensures that the HVAC system can shut down and isolate the building in a pressurised state, whilst protecting the workforce by means of recirculation.

Explosion proof

Designed to meet ATEX Regulations, explosion proof systems such as the Draeger Polytron 2 XP Tox, feature a metal enclosure wall and glass viewing windows. Incorporating several critical design factors to ensure that they contain any explosion inside the instrument, they prevent the ignition of any explosive gases outside of the enclosure. These features include enhanced enclosure strength, flange gap widths and quenching distance, i.e. the travel distance required through a narrow flange gap to ensure that the flame will be cooled or quenched before it reaches the exterior surface. Combining the functions of detection and alarm annunciation in one package through built-in relays, they incorporate infra red communication technology to allow normal maintenance and calibration functions to be performed without declassification of the area.

The portable solution

When working alone or where employees are regularly working within a potentially hazardous atmosphere, portable instrumentation can make sure that the creation of toxic gases and vapours, or oxygen deficiency or enrichment, does not go undetected.

In recent years the use of tiny, miniaturised electrochemical sensors has revolutionised personal gas detection instrumentation. Specially designed to allow powerful, reliable detection in instruments that can be as small as a mobile phone, they are highly sensitive to the gases being monitored. With an exceptionally long life of up to



eight years, for instance, the Draeger XXS sensors also offer long term stability and quick response times, ensuring that the user receives reliable warning against dangerous gases, immediately. For improved safety when facing unknown hazards, some instruments also incorporate a catalytic Ex sensor which, when calibrated to methane, responds quickly to explosive gases.

Bringing peace of mind to both the user and the employer, the better units will combine vibrational with visual and two-tone audible alarms. They should also be easy to configure and calibrate and be capable of downloading records. If it does not feature an integral data logger, an IR interface will enable connection to a PC and/or mobile printer.

Another consideration is the way in which the instrument is to be used. Is it easily recognised and clearly marked for use with particular gases and can it be operated with minimal training? This is particularly important where third party contract personnel may be involved. Can it be used with gloves and what happens if it is inadvertently placed in a pocket or a gas inlet is accidentally covered?

The more modern units feature straightforward push button controls and benefit from two gas inlets at the top and front of the unit. This careful positioning of the sensor inside the instrument means that gas ingress can still be assured. Large, language-free liquid crystal displays will make sure that the instructions and measurements are clearly understood and a back-lit control panel will avoid the problems associated with dark or dimly lit environments. Neckstraps should be supplied for



the larger instruments and, where smaller instruments are concerned, crocodile clips should fix them securely to the lapel or belt and rotate to allow the user to see the display properly.

In addition to providing continuous personal protection, portable instruments can also be used to verify that an area is safe to enter. Whilst confined space applications are a typical example, they are ideal for use during rescue or recovery and will ensure that decontamination has been successful after clean-up operations.

Providing one-off, on-the-spot measurements of targeted gases, short term tubes can provide fast, highly accurate measurement of over 1000 substances, including chemical warfare agents. They can also be used in conjunction with short term pumps to enable rapid measurements to be taken and provide optimum volume and flow specifications. Incorporating automatic stroke counters and a clear end of stroke indicator, pumps require no special tools and give accurate and reproducible results.

Handheld single gas instruments monitor for

known gases, a single gas at a time. Available with a wide range of electrochemical sensors that can be interchangeable, the most innovative instruments combine speed with accuracy, reliability and maintenance-free operation. Data logging capabilities will mean that essential data, including results, dates and times, can be stored, printed and downloaded.

High performance, multi-gas measurement instruments such as the Draeger X-am 7000 can be supplied with a choice of over 25 sensors to provide continuous detection of up to five gases simultaneously. This state-of-the-art instrument also benefits from pre-calibrated sensors that are instantly recognised by the instrument. As a result, the detector can be reconfigured immediately, simply by changing a sensor and without requiring additional service or maintenance.

As well as specially designed "two-in one" detectors for use with combination hazards involving explosive gases and a lack or surplus of oxygen, systems are also available for domestic preparedness applications. These specialist instruments use Open Loop Ion Mobility Spectrometry to detect a wide range of chemical and biological agents. Photo ionisation detectors (PID), which trace volatile organic substances in air and can be calibrated to monitor individual hazards, are also useful for confined space measurements emissions monitoring, fire investigation and post-accident screening.

As with all aspects of safety, legislation plays a part in deciding which system is right for each application. The latest SIL, ATEX, DSEAR and COSHH regulations can all be relevant and, for this reason, Draeger offers a range of training courses on the subject of gas detection. These include current legislation as well as the use, selection and care of gas detection equipment and, amongst others, gas detection in confined spaces.

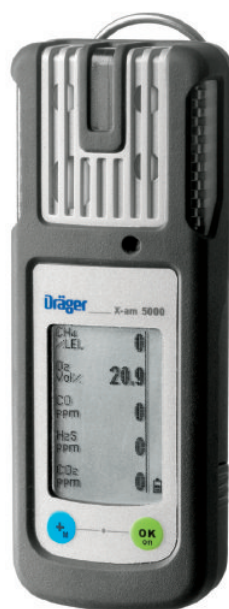
Draeger offers products, services and system solutions for all encompassing toxic, flammable and oxygen detection, flame detection and design, build, commission and maintenance of fire and gas detection systems for protection of personnel and assets.

IFP



Further information:
Fixed gas detection systems:
Marion Mackenzie
Tel: 01670 561413
www.draeger.com/gdsuk
Portable gas detectors:
Paul Harvey
Tel: 01670 352891
www.draeger.com

Just because the Dräger X-am 5000
can measure up to 5 gases,
it doesn't mean that it
has to be any larger.



At first glance you would never realize that the new Dräger X-am 5000 personal monitor has grown to meet your requirements. The reason for that is that whilst its capabilities have grown its physical size has not. We have not only developed the smallest 1 to 5-gas detector but we have also enhanced its capabilities with extended functionality, increased operating time and additional flexible application options.

The Dräger X-am 5000 not only detects O₂, CO and H₂S but is also capable of warning when harmful concentrations of CO₂, Cl₂, HCN, NH₃, NO₂, PH₃, SO₂, and organic vapors are present.

A variety of special calibrations for the new EX sensor (which outputs values in Vol.-% as well as % LEL) allow even more sensitivity when detecting combustible gases and vapors.

The Dräger X-am 5000 is also easy to upgrade: The Software Dräger CC-Vision makes it possible to customize the sensors to match your changing operational requirements.

PIONEERING SOLUTIONS >>

Detection
Personal Protection
Diving Technology
System Technology
Services

Dräger

Dräger Safety UK Limited • Tel: 01670 352 891

• Fax: 01670 356 266 • E-mail: uk.marketing@draeger.com

www.draeger.com

FM-200®

WATER MIST

CO2

FOAM

ALARM/DETECTION

AIR SAMPLING



JANUS
FIRE SYSTEMS™

EXPERIENCED
MANUFACTURER.
CUSTOMER FOCUSED.

YOUR GATEWAY TO A NEW KIND OF SERVICE

+1.219.663.1600

www.janusfiresystems.com

1102 Rupcich Drive

Crown Point, IN 46308 U.S.A.

FM-200® is a registered trademark of E.I. du Pont de Nemours and Company.

FIREMAIN

are pleased to be associated with

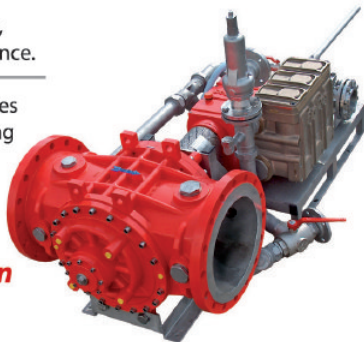
FireDos®

as their **UK Distributor**

Firemain offer Design, Supply,
Commissioning and Maintenance.

Oil Majors, Chemical Companies
and Fire Brigades are now using
FireDos in the UK

**Please call us now
to discuss
your foam application**



We have an extensive user
portfolio to help match your application
to the optimum **FireDos** set-up.

**20 years experience in foam fire
protection technologies.**



FIREMAIN Tel: 01744 850063

www.firemain.com

Unit 6, Harrier Court, Eurolink Business Park, Lea Green,
St Helens, Merseyside WA9 4YR

Quality Fire Resistance Testing



Fire resistance test equipment for indicative testing
and certification of horizontal and vertical specimens,
including columns, beams & ducts. Suppliers to national
certification laboratories worldwide.



Newton Moor Industrial Estate, Hyde, Cheshire
SK14 4LF, United Kingdom.

Tel: 0161 368 8419

Fax: 0161 368 3813

Email: sales@furnace-construction.co.uk

Metallurgical Heat Treatment Furnaces ■ Kilns for Advanced Ceramics
Non-Ferrous Melting Furnaces ■ Cremators and Incinerators

Hotfoam commissioning test



Covered in Foam – an overview of foam systems

By David Owen

Business Development Manager, Firemain Engineering Ltd.

David Owen, Business Development Manager with foam specialist Firemain Engineering Ltd., discusses the various foam systems available.

From foam enhanced sprinklers to high expansion generators, foam is used in fixed systems to deal with a bewildering variety of fire scenarios. However, one thing that they all have in common – with very few exceptions – is that flammable liquids are the fuel source. This article will provide an overview of the range from the foam frontline.

The science simplified: foam provides a barrier against flammable liquid vapours without aggressively mixing with the product and enhancing the volatility of fire from the fuel – water alone doesn't float on hydrocarbons and only serves to make matters worse. On the other hand, foam, whether aspirated or un aspirated film forming foam, suppresses the burning vapour either with its suppressant polymer or degree of expansion or both.

How we proportion the foam concentrate with water, and to what extent we expand it, is determined by the application. It's perhaps more informative to look at the system types first to help understand what choices there are to be made.

Foam enhanced sprinklers

Water is a fantastic firefighting medium, no question. However, sometimes it needs a little help when being delivered through sprinkler systems. Where a site has a large inventory of plastic material or where the storage medium itself is plastic, as in the case of tote bins, adding foam into the sprinkler nozzles via a bladder tank gives enhanced fire control. This is classed as un aspirated foam. In other words, there is no mechanism built into the system for entraining air into the foam to

give any expansion. Because the foam is only expanded to what might crudely be called a "milky effect," the foam concentrate itself needs to be aqueous film forming – AFFF. AFFF's have been around so long now that this isn't news and any LPC approved sprinkler contractor will be familiar with its use. Insurers often require an existing sprinkler system to be upgraded in areas where storage has changed over time, this could also apply to high flash flammables where the water will need some assistance if effective fire control is to be achieved. This isn't a problem with

Foam deluge systems

The difference between deluge and sprinklers, whether we use foam or not, is simply that in a deluge system a whole zone will actuate and apply water or foam to the hazard. The detection line is separate and controls the opening of a deluge valve to supply foam/water to the hazard. A range of detection options are available from simple air charged lines with detector bulbs through to triple spectrum UV/IR flame detection. On the other hand, sprinklers are self zoning in the sense that each head is both detector and fire control device:

Where a site has a large inventory of plastic material or where the storage medium itself is plastic, as in the case of tote bins, adding foam into the sprinkler nozzles via a bladder tank gives enhanced fire control.

the inclusion of a locally sited bladder tank and wide range proportioner. The bladder contains the foam concentrate and the bladder is retained inside a pressure vessel, the incoming pressurized water squeezes the bladder which drives the foam into a proportioner and the resulting foam solution flows to the discharge heads. It's essential to deliver the correct mixture of foam to water if one head operates or 20 so wide range proportioners are readily available. Actuation will still be via the frangible glass bulb of the sprinkler head at the set temperature.

if the fire is not controlled by one head operating, more heads will actuate until the assumed maximum area of operation is reached. Because deluge systems use open nozzles we have the option to aspirate the foam so that it becomes low expansion rather than unsupervised. This is achieved with the use of nozzles that entrain air and give an expansion ratio of up to 20:1 but more typically lower. A relatively gentle application of aspirated foam is to be preferred where solvents in particular are stored. Process hazards are typically where deluge systems are to be found.

FireDos® GmbH

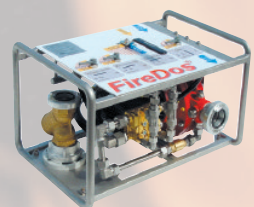
Admixing Systems for Fire-fighting

The intelligent choice for admixing systems

- No external energy required
- Working flow-proportional
- Easy installation and handling
- Retrofitting into existing systems possible
- Versions for stationary installations, or vehicles and mobile applications available, also for use with seawater
- Large flow ranges and dosing ranges covered
- Not affected by changing pressure or flow rate
- Suitable for all common fire-fighting liquids

Auf der Kaulbahn 6 • D-61200 Wölfersheim • Germany

Tel. +49(0)6036/ 97 96-0 • Fax +49(0)6036/ 97 96-30 • E-Mail msr@msr-dosierttechnik.de



www.firedos.de

Again, bladder tanks can be used to proportion the foam into the lines. It needs to be remembered that these are finite foam resources – the tank is designed to supply foam for a set period and the difficulty of refilling bladder tanks means that additional running time is not possible during the incident. Alternatives include balanced pressure proportioners fed by a dedicated foam concentrate pump but these have the drawback of another power source other than the pressurized water supply. Increasingly, a water driven proportioner such as FireDos is being used by installers who want to eliminate this potential source of failure and to eliminate the need for costly maintenance. Only pressurized water is required to drive the FireDos proportioner. FireDos uses an atmospheric storage tank for concentrate which means that running times are only limited by the

**It needs to be remembered
that these are finite foam
resources – the tank is
designed to supply foam for
a set period and the
difficulty of refilling bladder
tanks means that additional
running time is not possible
during the incident.**

foam stocks available as the tank can be refilled during use. It also allows the use of the most viscous foam concentrates with great accuracy in proportioning.

Medium expansion pourers

Using the same methods of proportioning and foam storage, we can expand most of the commonly available foams up to 200:1. This provides a substantial foam blanket but with very limited throw from discharge devices. It's ideal where a gentle application is preferred and where spillage of flammables is contained. This is typically into bunds around tank farms and process areas where bunding is easily achieved whilst not hindering the means of escape. Medium expansion foam was particularly successful at the Buncefield incident for securing the bunds once the more volatile bund fires had been dealt with by monitors.

The vapour suppressing qualities of foams are enhanced by the greater expansion achieved by MEX and by its density, although it should be born in mind that discharge devices need to be regularly placed around areas such as bunds to overcome the limiting effects on the travel of foam from obstructions.

High expansion foam

Along with foam enhanced sprinklers, this is another application where class B fires are not the only limitation to its use. Expanding foam to anything up to 1000:1 means that we have a very

light and relatively dry finished foam. Useless in anything but still air, it comes into its own within closed areas. As far back as the mid 90s a Hi Ex Hotfoam system (see below) was installed into a well known building society's deed store because tests showed that the documents were only marginally wetted by the finished foam. The incipient nature of fires in tightly stored paper products means that gas may not always be the medium of choice due to the need to maintain long hold times to prevent further combustion. Hi Ex can provide a good alternative.

However, the main applications for Hi Ex systems at present are for the protection of aircraft hangars and warehouses. For aircraft hangars, NFPA allows a choice of options including Hi Ex, roof level low expansion deluge and underwing monitor protection. Hi Ex is often chosen in preference because it produces far less firewater run-off, a significant issue when considering containment.

**You can rely on
Dr Sthamer – Hamburg
For all your foam needs**

**FOAM
FIGHTS
FIRE**

Proven Reliability.

**24/7 Emergency Supplies
From Stock**

Synthetic Foams

- Moussol APS
- Moussol FF **NEW!**
- Sthamex AFFF
- Sthamex
- Sthamex class A

Protein Foams

- Fluor-Foamousse
- Foamousse FFFP
- Foamousse OMEGA
- Foamousse

Ready To Use Foams

- Fettex
- Mousseal-C
- Mousseal-CF
- Mousseal-ATC

Training Foams

24/7

**EMERGENCY
SUPPLIES**

+49 40 73616 80

We offer a comprehensive range of high performance and environmentally friendly foams.



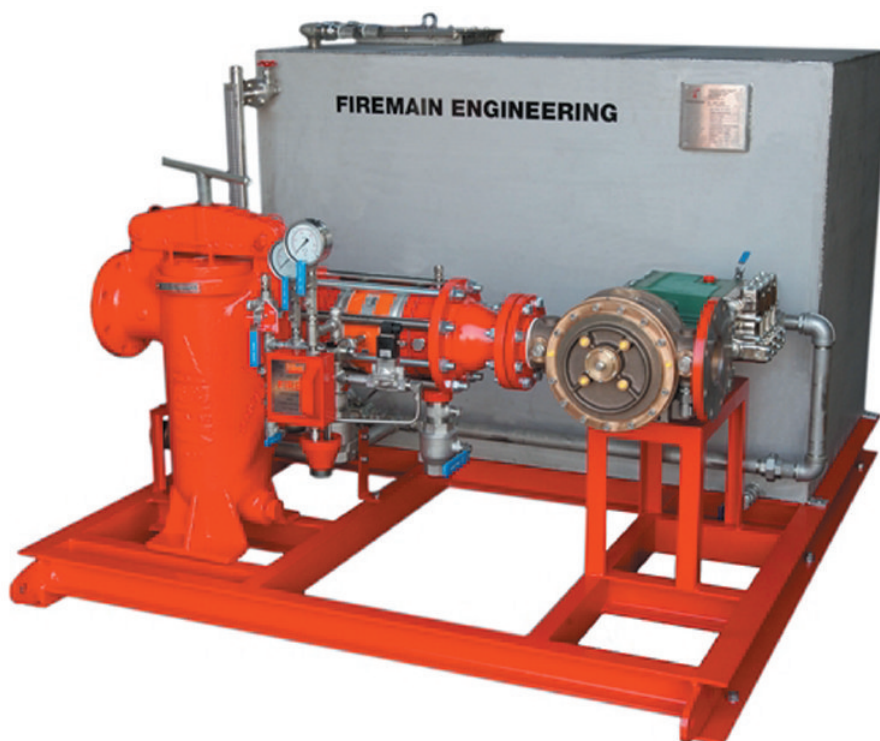
Dr. STHAMER HAMBURG

Head Office and Factory Hamburg
Liebigstrasse 5 · D-22113 Hamburg
Phone +49 40 736168-0
Telefax +49 40 736168-60
E-Mail: info@sthamer.com · www.sthamer.com

International Sales Contact
Mr. Jan Knappert
Phone +44 (0) 7795 101770
E-mail: jknappert@sthamer.com



*FireDos foam
proportioning skid*



The two main approaches with Hi Ex are (i) using air from external sources, i.e. opening vents to allow an air supply to the generator and (ii) using an internal air supply that could include the products of combustion from the fire itself, i.e. Hotfoam and its unique ability to generate foam from the exhaust gases and internal air supply.

(i) **Conventional generators** use a water driven fan, combined with a high expansion foam concentrate, to expand the finished foam to anything up to 1000:1. The generators can be located either along the side walls or roof level of the hangar or warehouse. Only aircraft hangars are considered large enough spaces not to need external air supply and over pressure venting when Hi Ex is used.

device that creates the expansion ratio, not the means of proportioning.

Tank protection systems

Storage tanks are largely divided into fixed roof and floating roof tanks. There are two different approaches for each – fixed roof tanks require foam pourers to be installed into the side wall of the tank with foam solution discharging onto the full surface of the product. Floating roof tanks are designed with a rim seal to contain vapours and it is this area that is vulnerable to fire. The rimseal pourer is designed to discharge around the circumference of the floating roof tank seal. Like all fixed foam systems, the rimseal pourer will tackle fire at an early stage. The means of

Foam systems are no different to other fire protection media such as gas or watermist: the most important thing is to choose the medium that is most appropriate for the fire hazard.

(ii) **Hotfoam** was developed by Svenska Skum and enables the use of Hi Ex far more economically in spaces such as warehouses. The generator has no moving parts, the high expansion foam discharging through nozzles that are combined with an external mesh assembly to expand the foam solution when mixed with the rising hot gases. The largest unit only weighs 10kg which means that it can be mounted as a nozzle off distribution and range pipework without the need for additional support structures.

Again, Hi Ex foam discharge devices can be supplied by either bladder tanks or FireDos type systems. It is the type of foam and the discharge

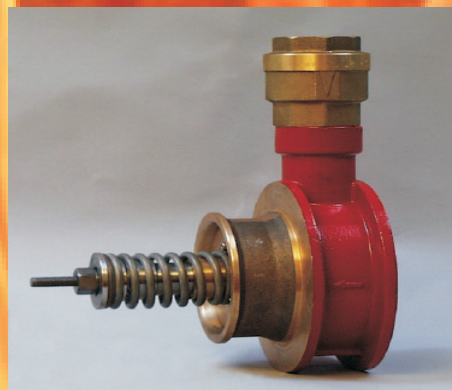
proportioning foam is similar to our other applications with the possibility of longer pipe runs to discharge devices. Using a FireDos proportioning skid will overcome any hydraulic issues associated with this as it uses a positive displacement pump to overcome line pressures.

Foam systems are no different to other fire protection media such as gas or watermist: the most important thing is to choose the medium that is most appropriate for the fire hazard. Foam's mixture of vapour suppressant, cooling medium and oxygen depleter means that it can work on all fronts of the fire triangle and is the medium of choice for most flammable liquid fire scenarios. **IFP**

For more information visit:
www.firemain.com



**Manufacturer of high quality foam concentrates
and foam equipment**
www.fomtec.com



**Quality products and customer support from
the true independent alternative. We supply
customers around the world. Visit our web
page WWW.FOMTEC.COM**

DAFO FOMTEC AB P.O. Box 683 SE-135 26 Tyresö Sweden
Phone: +46 8 506 405 66 Fax: +46 8 506 405 29
E-mail: info@fomtec.com Web: www.fomtec.com



Rebirth of water

Fire test demonstration during the last IWMA conference at DBI. A fire barrier with water mist is shown in order to protect glazing



The rebirth of water mist technology for general fire-fighting purposes, the broad and increasing variety of marine and land-based applications in particular, and the specific advantages of water mist systems compared to conventional agents have been discussed in numerous articles over the last two decades.

By Matthias Ecke

IWMA General Manager

Water mist fire-fighting today has certainly become a well accepted technology in the fire protection business and the number of potential applications has increased considerably over the last years. The well established water mist system manufacturers around the globe, serving the market for many years, have invested significant amounts of time and funds in research and development and collectively carried out thousands of fire tests in order to bring reliable systems to the market that meet the diverse requirement of different applications.

However, what will be the result if newcomers enter the market underestimating the need for extensive fire testing, which is essential for the development of reliable water mist systems? The answer seems obvious. The further success of modern water mist technology would be at risk, and the installation of unreliable systems would cause an unacceptable risk to lives and properties.

How can end users and others recognize a reliable or an unreliable system, and what is a reliable water mist system? The answer is not simple, but the following paragraphs intend to give some answers.

Reliable versus unreliable systems

The International Water Mist Association is a panel of dedicated professionals and companies having an interest in fire fighting systems using water mist as an extinguishing agent. Members of IWMA include independent scientists, research laboratories, manufacturers, insurers, end users and authorities. The IWMA believes that water mist is an effective fire protection media for many risks, often with performance advantages over traditional technologies when taking into consideration the excellent cooling effect and environmental aspects of the agent. However, the International Water Mist Association promotes exclusively the professional design, installation and maintenance of water mist systems.

IWMA has observed in recent months the tendency for few companies to offer and install systems in a manner inconsistent with the professional practices promoted by IWMA. The IWMA is concerned that the installation of unproven systems would lead to an unacceptable risk to lives and properties being protected.

Therefore, this article is particularly addressed to engineers, consultants, end users and others who

mist technology



Audience at the IWMA conference 2008. The next IWMA conference will take place from September 23–24 in London, United Kingdom

plan and supervise the installation of water mist systems, in order to provide some guidance on how to distinguish between reliable and unreliable systems. The association would like to share with other fire protection professionals its thoughts on professional procedures for the design, installation and maintenance that will help produce a reliable water mist system. In this regard, the IWMA has identified three very important issues that must be taken into account when selecting a water mist system:

● Fire Testing and Approvals

First, it is essential that the design of a given system is based on an applicable full-scale fire test protocol, carried out under supervision of an independent third party or witnessed by an authority having jurisdiction, and not merely based on assumptions, mathematical calculations, or simulations created by computer modeling.

The IWMA has recently observed that a few market players offer systems based on computer simulations only. It has to be emphasized that these practices lead to an incalculable risk to lives and properties, and the IWMA discourages such behavior. While computer simulations may be valuable as a supplemental tool in understanding a water mist system, they have not been sufficiently developed yet to accurately predict results. It is often the responsibility of the authority having jurisdiction to ask for fire test documentation and to assure the tested scenarios are appropriate for the risk being protected. Nevertheless, designers and engineers should also look for fire test documentation in order to assure the proper installation of a system for the respective risk.

Manufacturers can often provide official approval documentation which makes the task of assessing suitability easier. However, it is important to note that such approvals are often application

specific, thus one approval may not be relevant for another application. For those unsure as to the relevance of an offered approval, the IWMA can provide assistance through our pool of dedicated independent experts.

● Standards and Test Protocols

The role of standards and test protocols is important in guiding manufacturers, designers and system installers to produce high quality, reliable water mist systems. Even though not all possible risks are yet covered by standards and test protocols, the number of available documents continuously increases. The European standard for water mist systems was published in the summer of 2008 as Technical Specification 14972, and contains test protocols for flammable liquids, cable tunnels and office occupancies. Other test protocols are under preparation and will be included during the first revision cycle.

Furthermore, it is recommended to refer to the U.S. design standard NFPA 750, *Water Mist Fire Protection Systems*. NFPA 750 covers most of the mechanical and maintenance aspects of a water mist system. In addition, FM Approvals has published the test standard FM 5560, *Water Mist Systems*, which contains a number of various test protocols. Also, there are other test protocols such as IMO A. 800, MSC 668/728, MSC 1165 and MSC 913 prepared by the International Maritime Organization, principally focused on marine applications. These test protocols often provide useful guidance for the application of water mist systems to land based installations. Additional documents such as the International Standard ISO 15371 which addresses *Fire extinguishing systems for the protection of galley deep-fat cooking equipment* or the UL 2167, *Standard for Safety for Water Mist Nozzles for Fire Protection Service*, should be named in this context as well.

Test set up for a fire test under the the IMO regulation for machinery spaces. Validated scaling rules might save costs for fire testing to some extent



About IWMA:

The International Water Mist Association (IWMA) is a panel of dedicated professionals and companies having an interest in fire fighting systems using water mist as an extinguishing agent. Members of IWMA include independent scientists, research laboratories, manufacturers, insurers, end users and authorities. The main objective is to promote research, development and the use of water mist fire suppression systems world wide.

For more information please contact:

International Water Mist Association

Biederitzer Str. 5, 39175
Heyrothsberge, Germany
Tel: + 49 392 92 690 – 25,
Fax: 26
Mobile: +49 175 415 33 66
Email: info@iwma.net
Website: www.iwma.net

● Experience

Water mist systems are quite different from conventional fire fighting systems such as sprinklers, CO₂ or other gaseous systems in the way they are designed, installed, operated and maintained. Therefore, it is important that manufacturers and installers of water mist systems have gained the necessary experience to produce high quality, reliably performing systems. It is therefore common sense that the development of a reliable water mist system will take several years. That is, a functioning system is not just taking a water supply, piping network and nozzles arranged in grid form. In recent years, some companies followed this misconception and attempted to put together a system in such a manner. It is not that simple. They very soon had to acknowledge that this strategy failed. Considerable human resources, funds and time are indispensable for a fully functional system to be developed.

When considering a provider for a water mist system, prospective customers should ask for references and also training certificates from system manufacturers. Designers and engineers should also consider if the manufacturer provides an experienced and professional research and development department.

It can be concluded that adherence to fire testing, standards and test protocols and experience, as discussed above, will assure sound professional practices and reliable water mist systems for customers.

International Water Mist Conference 2009

An excellent opportunity, to extend the knowledge about water mist technology, will be the next International Water Mist Conference. The conference will take place this year from September 23–24 in London, United Kingdom. The conference is open to anybody and will offer an opportunity for those responsible for selecting fire protection as well as researchers/scientists to be updated on the current state of water mist technology for fire protection. This conference will be held in cooperation with independent member institutions which will provide full technical support for the conference. All necessary information about the conference can be found on the web page of IWMA www.iwma.net

Current research work

One of the major questions in the future is going to be if and how scaling rules can be applied to water mist systems. The need for full scale fire testing was broadly discussed above. However, scaling rules – based on the investigation of real fire test data – could help to reduce the cost for testing and, therefore, the overall system costs to some extent. The International Maritime Organization has discussed this issue during the last session in 2008 but the discussion was postponed due to the lack of sufficient data. IWMA has started a research program on this subject matter, and the results will be presented at the next IMO meeting in February. Furthermore, IFP will publish in the next issue an article on the results of the research program. **IFP**

International Water Mist Conference 2009

23 - 24 September, 2009
London, United Kingdom

The 9th International Water Mist Conference is presented by the



in conjunction with independent member institutions

Please see
www.iwma.net
for more information

The conference includes a site visit on the second day at the British
Research Establishment (BRE) with real fire demonstrations

Registration

Name _____ First Name _____

Organization Address _____

Tel.: _____ Fax: _____ E-mail: _____

Payment received on or before 26 June

Payment received after 26 June

On-Site Registration

Members **460 Euro**

Members **520 Euro**

Members **540 Euro**

Non-Members **520 Euro**

Non-Members **580 Euro**

Non-Members **600 Euro**

☐ Bank transfer

☐ Credit Card*

*Payment by credit card available for attendees outside Europe through Paypal

Date _____ Signature _____

Fax or mail this registration form to: **International Water Mist Association**, Biederitzer Str. 5, D-39175 Heyrothsberge, Germany,
or register online at **www.iwma.net**

Phone **+49 - 392 92 - 690 25**

Fax **+49 - 392 92 - 690 26**

E-mail **info@iwma.net**

Cutting Fire-rat Installation Cos



The global economy is having its inevitable impact on the construction market – orders are in shorter supply, competition is fiercer and margins are being squeezed. At the same time, quality expectations are on the rise and fire safety legislation is being rigorously enforced. It is a tough time to be an installation contractor, so here Mark Froggatt looks at some of Draka's recent contracts where its Firetuf Connecta system has delivered considerable time, cost and ease-of-installation savings.

By Mark Froggatt

Firetuf Connecta was developed in the late 1990s with the aim of simplifying and reducing the installation cost of projects that have repetitive wiring requirements. It has become particularly sought after for road and rail tunnels, power and mass transit emergency lighting and 3-phase power applications and has been used on a number of high profile projects around the globe. These include the Mass Rapid Transit system at the Changi Airport extension and the Victoria Line extension in Singapore, the HS1 – High Speed 1 – rail link between London and Paris, the Dublin

Port Tunnel, the Docklands Light Railway extension and the Heathrow Express extension.

The key installer benefit of the Firetuf Connecta OHLS halogen-free modular wiring system is that every Connecta installation is manufactured and delivered in precise predetermined cable-loom lengths of Draka cable between the factory-fitted moulded Connecta socket outlets that eliminated the need for on-site joint forming. Connecta components are also manufactured from a high quality injection-moulded OHLS material. The system features a male joint and female plug with

ed Cable ts



an optional integral fuse and coupling nut, and is available with a primary cable in a range of sizes that span from of 2.5mm² to 50mm², in three, four or five-core cable options and a wiring loom length of up to approximately 700 metres, depending on the cable size and number of sockets.

Quick-fit secondary outlets to individual appliances or luminaires are taken from the primary cables via moulded Connecta OHLS plugs that enable the accessories to be plugged in as opposed to being hard wired. This results in fast installation that minimises the site labour and skill requirement and so significantly reduces the overall project labour cost and timescale.

Firetuf Connecta is fully approved to BS 6387: 1994 (*Specification for performance requirements for cables required to maintain circuit integrity under fire conditions*) in particular the C, W and Z test that is used to determine if a cable is capable of maintaining circuit integrity under different fire conditions. This superb fire performance ensures that emergency lighting will continue to function if one section of the circuit is involved in a fire. It is

based on Firetuf power fire-performance cable, is available in both fire resistant and flame retardant designs and provides ingress protection to IP67.

Significantly for applications where, in the event of a fire, the public may have to evacuate in extremely stressful circumstances, OHLS cables do not emit halogen gases and burn without producing large amounts of dense smoke. By comparison, under fire conditions, the standard PVC cables used widely in the construction industry emit hydrogen chloride gas, which has a suffocating odour that is detectable in even very low concentrations.

One of the earliest Connecta projects was the Channel Tunnel Rail Link, now renamed HS1, which utilised almost 100km of Connecta varying in size from 6mm² five-core cable up to 25mm² five-core. Onto this Draka's Connecta partner, Custom Design Group in Cwmbran, Wales moulded almost 5,000 Connecta outlets. The London section of HS1 starts with a 2.5km tunnel that dives under the Thames near Dartford, then runs alongside the London, Tilbury and Southend rail

**Significantly for applications
where, in the event of a fire,
the public may have to
evacuate in extremely stressful
circumstances, OHLS cables do
not emit halogen gases and
burn without producing large
amounts of dense smoke.**

track as far as Dagenham. Here it enters a 19km tunnel before emerging over the East Coast main line near St Pancras Station. The tunnel is interrupted by the new Stratford International Station, where a 1km stretch runs close to the surface, dividing the tunnel into London East and London West sections.

The 4.5km Dublin Port Tunnel, an underground twin dual-carriageway that links Dublin Port with Dublin Airport and the main arterial routes to and from the capital, used 25km of Connecta, both 4mm² and 25mm², with 955 outlets. A key factor influencing the decision to install the Draka system was given at the time as being Connecta's ability to maintain the integrity of the circuit even if a local device fails in the event of a fire. This ensures that escape routes either side of a failed luminaire remain illuminated rather than plunging people in the tunnel into panic-inducing darkness. This was underpinned by all of the Connecta components being individually tested before leaving the factory,



and then retested as a complete system with the luminaires energised.

While tunnel lighting accounts for the majority of Connecta applications, the versatility of the system is such that it has also been used extensively for power applications in a number of demanding high-hazard environments. When London Underground was refurbishing the Waterloo and City Line, in addition to using Connecta for tunnel lighting, it was also chosen for power sockets, where transformers were used to power tools in the tunnels in order to carry out maintenance work. The time allocated for maintenance on the underground is understandably very limited, the use of petroleum or gas generators in the tunnels is prohibited, and the alternative of setting-up compressed air generators on the platforms is a very time consuming operation.

An even more demanding application occurred during the decommissioning of a nuclear power plant in Trawsfynydd, North Wales. There the Connecta system was used in a waste bunker – where, again, access time is limited – as it was established that a plug and socket system would

reduce the number of hours required for the maintenance of the lighting circuits. The site used 1.8km of Firetuf power cable with 275 moulded sockets and leads. This particular cable is manufactured in compliance with BS 7846 (*Electric cables. 600/1000 V armoured fire-resistant cables having thermosetting insulation and low emission of smoke and corrosive gases when affected by fire*). It is particularly appropriate for applications where the danger to life, equipment and structures may be greatly increased in the event of a power failure due to fire.

A bonus in both the Waterloo and City Line and the Trawsfynydd nuclear power plant power socket installations, is that Connecta itself is designed to require the minimum maintenance.

The latest high-profile project is the 2.5km extension to the Docklands Light Railway (DLR) in London from King George V Station to the new Woolwich Arsenal Station. The contract called for 8,940 metres of Draka OHLS cable and 711 Connecta socket outlets for the emergency lighting in the tunnel, which runs as deep as 35 metres under the River Thames.

IFP





The Sound Of The 21st Century

By Charlotte Philo

Cranford Controls Ltd

After yet another year of highly publicised fire incidents, including fires at the Royal Marsden Hospital and in the Channel Tunnel, 2009 is already shaping itself up for a much urged and major push on fire safety within public buildings. With such a range of products on the market there is no excuse for those responsible for the safety of others to ignore their moral and legal obligation.

Building up part of the basis for modern day building and fire codes are the lessons that have been learned from past fires. It is these which have helped to structure the laws that have been put in place for owners and operators to abide by, ensuring the up-most fire protection is provided. By following the fire code, those entrusted must inspect and maintain the requirements and quality of various fire safety items to ensure optimal functionality and protection. With the correct fire safety features installed the amount of damage and injury caused by fire can be reduced.

Due to constant growth and demands within the market, the fire safety sector has developed new products to ensure a sustained commitment to the public's wellbeing. Available products include sounders, beacons, sounder/beacon combined units, intrinsically safe equipment, power supply units, door retainers, fire bells, beam detectors and call points. Between these, both the fire and security sectors can be catered for; some products, such as sounders and beacons now cover a much wider operating voltage range enabling product to be used for both applications.

With increasing awareness and emphasis being placed on the Disability Discrimination Act (DDA) installers' and proprietors' should ensure that they are prioritising this law with the upmost importance. To ensure compliance, applications should feature audible alert (such as sounders), visual alert (beacons for example) and tactile stimulation (products such as the Deafgard.)

Consideration for ease of entry and exit should also be put into place, door retainers are ideal for this, keeping fire doors accessible for wheel chair users. However, despite the DDA's growing importance, sounders still remain a top seller within the fire safety sector with many different options available.

Although the sounder market place offers consumers' a wide choice of products, virtually all can be used for most applications.

Even though the more traditional fire bell is still available further development has been made over the years to include new and exciting products. These include voice sounders, room sounders (ideal for bed heads), combined sounder/ beacon units (perfect for compliance with the DDA), platform sounders, platform sounder beacons (both



can be left to stand alone with a cover plate or completed with a smoke detector attached) and the standard sirens.

Market trends are showing that voice sounders are on the increase with consumers particularly liking the fact they can select a specific alert from a multitude of various warnings thus making the product suitable for all types of sectors and applications.

Amongst various regulations that have been put into a effect it is also enforceable that all audible

alarms are required to have an output of at least 5 decibels above the ambient background noise in general areas such as offices and shops; however in sleeping areas the minimum level should be 65 decibels with 75 required at the occupant's bed head.

At the heart of each and every sounder is either a pressure transducer or piezoelectric unit; to produce the audible alert from the sounder, thus acting as its speaker. Since the introduction of the piezo within the fire safety sector, there has been

High Performance Directional Sounder Yodalex~YO9 series



NEW

Baseefa
ATEX & IECEx
Approved



Clifford & Snell has extended its range of Explosion Proof Audible & Visual Signalling devices with the introduction of a new series of High Output Directional Sounders.

Features include:

- Lightweight GRP Exd enclosure
- High sound output 115dB
- ATEX & IECEx Approved for Gas & Dust
- Zones 1 & 2
- Certified temperature range -20°C to +60°C
- 32 selectable sound tones
- Dual M20 cable gland cable entry
- Gas groups IIB & IIC
- 24Vdc, 48Vdc. Single AC unit covering 115Vac & 230Vac
- Adjustable stainless steel ratchet bracket
- Stainless Steel fixings

For more information please contact the Clifford & Snell sales office:

Tom Cribb Road, Thamesmead, London SE28 0BH, UK. Tel: +44 (0) 208 317 1717 Fax: +44 (0) 208 317 2400

Email: sales@cliffordandsnell.com Web: www.cliffordandsnell.com



on-going research and debate into the benefits of using the traditional pressure transducer for the unit's sound production.

As with everything both have their benefits and disadvantages yet the industry seems to want to progress further with incorporation of piezo units within products so moving away from the established pressure transducer;

With the economy as it stands, pressure transducers are not economically viable as they are expensive to produce due to their internal complexity and construction, leaving manufacturers in a position where they are unable to reduce costs.

Pressure transducers work by the applied energy fixating on moving its internal coil to create the necessary sound waves. This type of technology in turn requires higher amounts of energy causing the product to be less energy efficient, limiting the amount of sounders and beacons, for example, a system panel can have on its loop or sounder circuit.

Despite the pressure transducer's high current draw and cost, the product offers a wide dynamic sound range enabling a greater sound quality, which makes the pressure transducer ideal for use within sounders.

Because piezo units work differently from pressure transducers; their simple design with minimal component count enables a lower manufacturing cost. The design is predominantly encased in a plastic housing with the inner parts made from metal and a piezoelectric material, in this case piezoelectric ceramic. The simplicity of the design allows for a quick and effective mass production of the item. By applying AC Voltage to the piezo's electrodes the piezoelectric effect occurs, this means that the electrical power causes the piezoelectric ceramic to expand and contract causing the metal diaphragm surrounding it to bend, creating sound waves. The design of the piezo itself has been done so the mechanical resonant frequency matches the frequency of the driving signal.

However, the relative low cost and the energy efficiency of the piezo comes at a price, as it does not give the same dynamic sound range as its transducer rival. To achieve a frequency range that comes close to the pressure transducer the piezo has to be optimised for each application both electronically and mechanically.

IFP

For further information on the products mentioned in this article and information on additional products to help fully equip your fire safety system please contact **Cranford Controls** on 01420 592 444

**The UK's Leading Independent
manufacturer of Quality Fire
and Security Products**



Quality shines

Focusing strongly on our research and development, Cranford Controls are extending our already high quality product range with further exciting and reliable products.

The popularity of the current Cranford products are well renowned throughout the industry. Combined with our extensive stock levels and the constant praise we receive for quicker delivery time than competitors; Cranford Controls really do outshine the rest.

Why not contact us
for more information on

T: +44 (0)1420 592 444

F: +44 (0)1420 592 445

www.cranfordcontrols.com

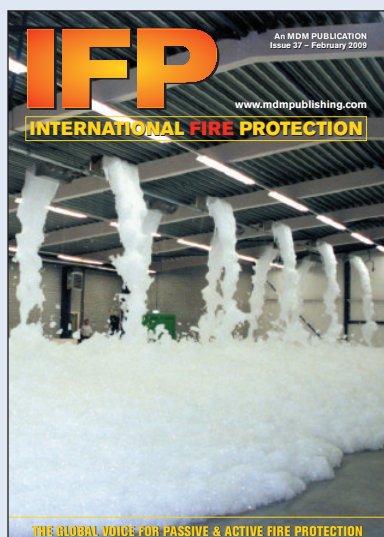


CRANFORDCONTROLS™
FIRE & SECURITY

SUBSCRIPTIONS

INTERNATIONAL FIRE PROTECTION

GET YOUR SUBSCRIPTION NOW!!!



**IFP IS PUBLISHED 4 TIMES A YEAR
– FEBRUARY, MAY, AUGUST AND
NOVEMBER**

Name: _____

Company/Organisation: _____

Address: _____

Telephone: _____

Fax: _____

E-mail: _____

Start Subscription from Issue: _____

Subscription Rates: UK £35.00 Europe €60

Rest of World US \$70.00

Back Issues: US \$18.00, £10.00 or €15 each inclusive
of P&P (subject to availability)

METHODS OF PAYMENT:

Website Subscription: www.mdmpublishing.com

Cheque: _____ MDM Publishing Ltd.

Visa/Mastercard No: _____

Expiry Date: _____ Security Code: _____
(last three digits on reverse of card)

If paying by credit card please fax details. DO NOT post/mail.
Fax: +44 (0) 1935 426926

MDM Publishing Ltd.

The Abbey Manor Business Centre, The Abbey, Preston Road,
Yeovil, Somerset BA20 2EN, United Kingdom

ADVERTISERS' INDEX

Bavaria Egypt	IBC
Clifford & Snell	70
Control Logic	4
Cranford Controls	71
C-Tec	21
Dafo Fomtec	61
Dr Sthamer	59
Draeger Safety	55
Draka UK Limited	IFC
Fike Corporation	41
Fire Fighting Enterprises	25
FireDos	58
Firemain Engineering	56
Firetrace	30
Furnace Construction	56
Halon Banking Systems	17
Hochiki Europe	22
IWMA	65
Janus Fire Systems	56
Kentec Electronics	11
Kidde Fenwal -Chemetron	OBC
Metron Eledyne	51
OCV Control Valves	49
Patterson Pumps	46
Reliable Fire Sprinkler	26
Securiton	25
Sensitron	50
Sevo Systems	45
STI Europe Ltd	19
Tyco Fire Suppression & Building Products	9
Unifrax Corporation	36
Xtralis	14



You can always have your own **SAFETY** point too

BAVARIA[®] Fire Fighting Solutions

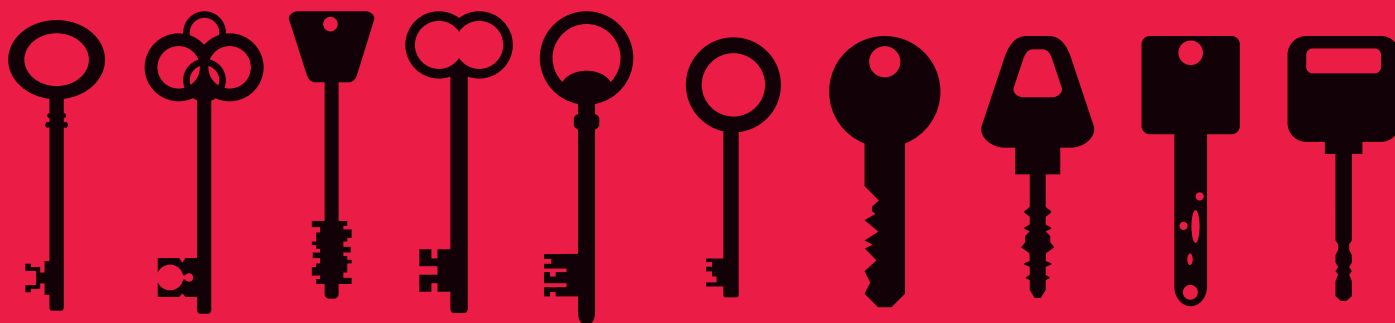
The Biggest Manufacture of Fire Extinguishers and Integrated Solutions in the Middle East with Most Significant International Accreditations

- Car Fire Extinguishers
- Portable Fire Extinguishers
- Mobile Fire Extinguishers
- Fire Fighting Trailers
- Fixed Self Actuated Fire Extinguishing Solutions
- Fire Cabinets with a Big Variety of Models and Accessories
- Light Fire Trucks
- Fire Fighting and Rescue Equipment
- Smoke, Heat, and Flame Detection Systems
- Total Suppression Systems
- Fire Fighting Equipment
- Fire Fighting School



Germany - Egypt - Port said - Lebanon - U.A.E
www.bavaria.com.eg info@bavaria.com.eg





Every industry needs a unique fire protection solution



The Key to Worldwide Protection.

Chemetron Fire Systems offers the widest range of fire protection solutions to suit your needs. Protecting your most vital assets and operations is our mission and passion. Including low pressure CO₂, water mist, Argonite™, 3M™ Novec™1230 fire protection fluid and FM-200®; our systems protect the assets most vital to you — data centers, power generation facilities, milling applications, LEED certified projects as well as other high value business systems, to name just a few.

With project management, installation and service Chemetron is the one manufacturer that can unlock the solution to all of your fire protection challenges.

Backed by *our* experience. Focused on *your* future.

With over 70 years of experience, let Chemetron provide the key to your unique challenge. Call us today at 708-748-1503 ext 411, or go to: www.chemetron.com

CHEMETRON
Fire Systems™

A UTC Fire & Security Company

IFP

An MDM PUBLICATION
Issue 38 – May 2009

www.mdmpublishing.com

INTERNATIONAL FIRE PROTECTION



THE GLOBAL VOICE FOR PASSIVE & ACTIVE FIRE PROTECTION

NEW - FIRETUF POWERPLUS

Enhanced power cable performance to meet BS 7346-6 and BS 7846.

BS 5839-1: 2002

Firetuf is approved to the highest standards, providing superior flame retardance and circuit integrity.

NON MELT AND DRIP

Firetuf products will not propagate and cause secondary fires.

EASY STRIP

Firetuf provides the fastest ever sheath removal, allowing reduced termination times.

ZERO HALOGEN LOW SMOKE

Our OHLS cables are manufactured to deliver optimum performance across a range of applications.

FUTURE PROOF

Concerned about new fire safety legislation? Relax, the Firetuf range is the highest standard cable available today.

AS FIRETUF AS THEY COME

Firetuf® from Draka is the ultimate circuit integrity cable. Manufactured and approved to the highest standards, Firetuf delivers unbeatable benefits to specifiers and installers of fire engineering systems. And with our brand new Firetuf Powerplus range of power cables, delivering enhanced performance to meet BS 7346-6 and BS 7846, you can trust Draka to provide the complete solution to all your specialist cable needs. To find out more call 01332 345431 or visit our website www.drakauk.com



Draka

The world's most trusted cable brand

Draka UK Limited, P.O. Box 6500, Alfreton Road, Derby, DE21 4ZH, UK
Tel: +44 (0)1332 345431 Fax: +44 (0)1332 331237 email: firetuf@draka.com www.drakauk.com

IFP/Firetuf/0509

**May 2009
Issue 38**



Front cover picture courtesy of
BW Technologies by Honeywell

Publishers

Mark Seton & David Staddon

Editorial Contributors

Nick Grant, Phil Bartlam, Phil Heath,
Keith Rose, William Ball, Rowland
Davies, Richard Niemann, Thierry
Moinet, Bob Choppen, Don
Connor, Marcel Ruesink, Wilf
Butcher, Andy Kay

IFP is published quarterly by:

MDM Publishing Ltd
The Abbey Manor Business Centre,
The Abbey, Preston Road,
Yeovil, Somerset BA20 2EN
Tel: +44 (0) 1935 426 428
Fax: +44 (0) 1935 426 926
Email: dave.staddon@ifpmag.com
website: www.ifpmag.com
©All rights reserved

Annual Subscription

UK – £50.00 Europe – €60

Overseas – US\$70.00

ISSN – 1468-3873

DISCLAIMER:

The views and opinions expressed in
INTERNATIONAL FIRE PROTECTION are not
necessarily those of MDM Publishing Ltd.
The magazine and publishers are in no
way responsible or legally liable for any
errors or anomalies made within the
editorial by our authors. All articles
are protected by copyright and written
permission must be sought from the
publishers for reprinting or any form of
duplication of any of the magazines
content. Any queries should be addressed
in writing to the publishers.

Reprints of articles are available on
request. Prices on application to the
Publishers.

Page design by Dorchester
Typesetting Group Ltd

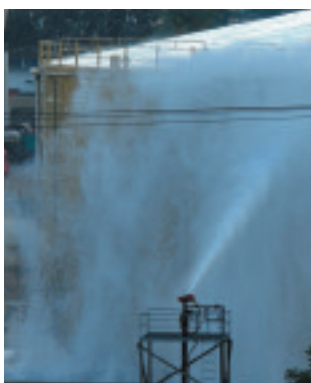
Contents



13-15



21-23



31-35



43-45

2-3 NFPA Profile

**5-10 News &
Product Profiles**

**13-15 Testfire:
innovation and benefit
profile**

**17-19 Innovative
Approaches to 21st
Century Special
Hazards Fire
Suppression**

**21-23 Buying into
Retail and Commercial
Fire Safety**

**25-28 Keeping a
Watchful Eye on
Industrial Fire
Protection**

**31-35 Storage Tank
Fire Protection – Leave
Nothing To Chance**

**37-40 Quelling Cold
Store Fires**

**43-45 My job isn't
worth dying for. Is
yours?**

**46-47 You Can't
Escape Your
Obligations**

**49-52 Thinking
Inside the Box**

**55-56 Halon
Recycling**

**59-62 Firetrace®
Protects Delhi Airport's
New Terminal's Micro-
environments**

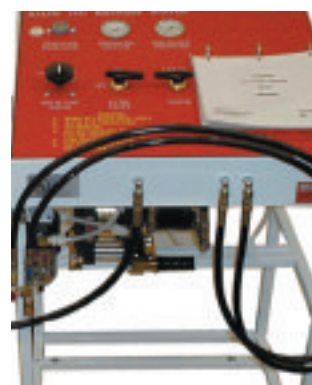
**64-66 Fire Facts for
Insulation**

**69-71
Compartmentation – so
Important in Saving
Lives**

**72 Advertisers'
Index**



49-52



55-56



59-62



64-66

NFPA Conference & Expo

McCormick Place, Chicago • June 8–11, 2009

This June more than 5,000 fire and life safety, electrical and security professionals will convene in Chicago for NFPA®'s Conference & Expo and it's sure to be a hit! The NFPA Conference & Expo, formerly known as the *World Safety Conference & Expo (WSC&E)* is the undeniable industry leader in the fire, life safety and electrical sectors. This event is truly like no other – it offers an unrivaled educational experience, networking opportunities and invaluable solutions to your on the job challenges.

The Education Conference

This year's conference will feature more than 130 education sessions within 10 conference tracks. The special track on *Fire Protection Engineering* sponsored by the Society of Fire Protection Engineers (SFPE), will once again take place. In addition, the *Building and Life Safety Track* concentrates on practical information needed by designers, engineers, and building and fire officials, such as plans review, inspection techniques, and updates on code requirements, new technologies, and best practices. Rounding out the conference tracks are:

- **Codes and Standards** – includes information on the reasons behind important code changes and how they will be implemented, and applies specific code requirements to particular occupancies.
- **Detection and Suppression** – Focuses on code requirements and design issues, the application of new technologies in alarm and suppression systems, and the impact of maintenance on systems performance.
- **Emergency Preparedness/Business Continuity** – Includes information on assessing risks and consequences, emergency preparedness, contingency planning, incident management, and recovery plans.
- **Fire and Emergency Services** – Includes current information on fire-fighting apparatus and technologies, safety and preparedness for first responders, incident command strategies, and fire prevention and inspection techniques.
- **Facility Fire Safety & Security** – provides practical information centered on environmental health and safety, and loss prevention issues.
- **Electrical** – Considers new electrical design issues, successful maintenance programs, and best practices in electrical contracting, effective inspection techniques, and practical electrical safety programs.
- **Public Education** – Includes fire and life safety planning and strategies. Also offers the latest in

safety education including challenges and creative solutions.

- **Research** – Considers the latest information available on many timely issues, such as video smoke and flame detection systems and reliability of water mist fire protection systems.

Featured Presentation

On Wednesday, June 10th, Dr. Shyam Sunder, Director of the National Institute of Standards and Technology's (NIST) Building and Fire Research Laboratory will discuss the NIST report on the collapse of Tower 7. He was NIST's lead investigator of the World Trade Center disaster. His report will include the investigation process, and the analysis necessary to determine the sequence of events that resulted in the collapse. Don't miss this special presentation!

Spotlight Sessions

Within these 10 conference tracks are sessions that are highlighted due to their focus on current industry topics and relevancy. Enhance your professional growth and learn from leading authorities by attending one of these four Spotlight Sessions:

- Revisions to NFPA 13 – 2010 Edition
- How the Great Chicago Fires Impacted Code Development
- The New NFPA 72® – More Than Just a Fire Alarm Code
- U.S. Chemical Safety & Hazard Investigation Board (CSB) Response to Dust Explosions and Other Investigations

The Expo

The three-day product exposition will showcase many of the latest technologies and services from more than 300 of the top solution providers in the fire and life safety, electrical, and security industries. Knowledgeable representatives from these companies will be available to answer your questions and offer solutions to your most pressing challenges. The exposition provides attendees the ideal location to see, touch and try products as



well as meet with a company's technical staff. As always, the exposition is free when you register in advance.

Pre-Conference Seminars

The 2009 NFPA Conference & Exposition will officially begin on June 8th, but many people are attracted to NFPA's pre-conference seminars due to their substantial discount from NFPA's regular seminar pricing. Some of these seminars will only be offered in Chicago and is a true compliment to attending the exposition. The selection of pre-conference seminars will start on Saturday, June 6th and conclude on Monday, June 8th and are priced separately from the main conference. NFPA will be offering 3 of our most popular code seminars as 3-day pre-conference seminars this year. Each of these 3-day pre-conference code seminars will end at 3:00 pm on Monday which will give attendees the opportunity to attend the General Session in the Arie Crown Theatre

• Three 3-Day Seminars are being offered Saturday, Sunday and Monday

- NFPA 13, Installation of Sprinkler Systems
- Fire Alarm Code
- Life Safety Code® Essentials

• Eight 1-Day Seminars are being offered on Saturday

- Crowd Safety and the Life Safety Code®
- Explosion Prevention and Protection
- IAEI Soares Grounding and Bonding
- NFPA 13 – Proposed Changes
- Sprinkler Systems Plans Review
- NFPA 45, Fire Safety in Research Labs
- Behind-the-Scenes Tour & Technical Presentation – Fermi National Accelerator Laboratory
- Behind-the-Scenes Tour & Technical Presentation – UL Facility

• Eight 2-Day Seminars are being offered on Saturday and Sunday

- CFPS Primer
- Code Requirements for Maintaining Fire and Life Safety Systems
- Environment of Care: The Next Evolution of the Physical Environment
- Life Safety Code® Plans Review
- NFPA 1, Fire Code
- NFPA 70E®, Electrical Safety in the Workplace®
- NFPA 921, Fire and Explosion Investigations
- NFPA 1600, Disaster/Emergency Management and Business Continuity Programs

• Four 1-Day Seminars are being offered on Sunday

- Dust Explosion Hazards
- Emergency Evacuation for People with Disabilities

- NFPA 72®-Proposed Changes
- NFPA 99, Health Care Facilities
- Stallcup's High-Voltage Electrical Systems

The Technical Committee Report Sessions

At the heart of the codes and standards development process is the technical committee report session. More than 25 documents are up for review this June including NFPA 101, Life Safety Code and NFPA 70E, Electrical Safety in the Workplace. Don't miss this opportunity to see the code making process in action. Documents that cover aircraft and airport facilities rescue and fire fighting, fire tests, forest and rural fire protection, building codes, life safety, hazardous materials response personnel, pyrotechnics and more will be voted on during these sessions. As a reminder, all technical committee members will receive a 20% off conference registration prices. In addition, a technical committee AND an NFPA member your discount is may be greater! For more information, visit nfpa.org/conference.

General Session Special Presentation



The Second City has been performing sketch comedy in front of audience for nearly 50 years, making it the standard by which comedy and improv in America is judged. So much talent has come from the ranks of the company's many theaters over the years, it reads like a who's who of contemporary American comedy. Some of their most well-known alumni include John Belushi, Gilda Radner, Dan Aykroyd, John Candy, Mike Myers, Chris Farley, Tina Fey, Rachel Dratch, Steve Carrell and Stephen Colbert.

Second City Communications works with corporate groups to create a fun, interactive and unconventional approach to training and entertainment. Working with groups as small as 4 and as large as 18,000, they have worked with the employees of over 400 Fortune 1000 companies.

Chicago

Often referred to as the Second City, Chicago is a premier location for world-class attractions, exceptional dining experiences and popular museums and theatres. Experience the savory selections from countless restaurants and visit the ever-popular eight block stretch of Michigan Avenue – The Magnificent Mile, a 'mile' of more than 460 stores and specialty shops. Chicago offers over 29 miles of beautiful lakefront paths, breathtaking views from the Sears Tower, and an unmatched aquatic experience at Shedd Aquarium. Whether you come to see the sights and sounds of historic Navy Pier or the nostalgic ambiance of Wrigley Field, there's a lot to do in Chicago. Come to the 2009 NFPA Conference & Exposition for an incomparable learning experience, and be sure to explore all that Chicago has to offer. Find out more at nfpa.org/conference!

IFP

NITTAN

"We apologise for this blank page, but we're too busy getting our new product range ready for Fire Expo.

Come see us at stand D60, Hall 3 where we will be launching over 30 new products, or visit our NEW web site now."

Firetrace® to show “Micro Environment” Fire Protection

INTERNATIONAL FIREX PREVIEW (Stand No: G25 Hall 3)

Firetrace International will be showcasing its self-contained FIRETRACE® automatic fire suppression solution that today is ensuring cost-effective, fast-reaction protection for over 75,000 pieces of business-critical equipment around the world. It is providing reliable unsupervised protection that is stopping fires before they can do expensive and possibly irreparable damage to vital enclosed mission-critical equipment such as production machines, electrical cabinets, machinery housings, wind turbines, engine compartments, fume cupboards, IT servers and a wide variety of technical systems.

Being housed in some form of “micro-environment” enclosure, these assets are effectively isolated from a facility’s main fire detection and alarm installation. The result is that, by the time a remote detector or sensor has been activated, the enclosed asset is virtually certain to be engulfed in flames and



FIRETRACE® is currently protecting over 75,000 “micro-environments” around the world.

extensively damaged, if not destroyed. FIRETRACE resolves this challenge by providing around-the-clock protection where it is needed – inside the enclosure, where it can react the moment a fire breaks out. It is an automatic “self-seeking” system; a stand-alone solution that is entirely self-contained that does not require an external power source.

The UL (Underwriters Laboratories) and FM (Factory Mutual) certified and CE (Conformité Européenne or European Conformity) approved system comprises an extinguishing agent cylinder that is attached to proprietary Firetrace Detection Tubing via a custom-engineered valve. This small-bore polymer tubing is a linear pneumatic heat and flame detector that was specially developed to deliver the desired temperature-sensitive detection and delivery characteristics. It detects along the entire length of the tube, so the FIRETRACE tubing quickly detects a fire at its source, ruptures and automatically releases the suppression agent, extinguishing the fire precisely where it starts and before it has had time to take hold.

Stand personnel will demonstrate the flexibility of the tubing, which means it can be easily threaded around tightly-packed compartments and components, so is able to contend with the often complex interiors of these micro-environments. A wide selection of suppression agents is available, the choice being dependent upon the characteristics of the fire hazard and any environmental considerations. The current offering includes clean agents such as 3M™ Novec™ 1230 Fire Protection Fluid and DuPont™ FM200®. Other options include foam, carbon dioxide and dry chemical suppressants.

Visitors to the stand will also learn how FIRETRACE systems can be configured for either direct release or indirect release. Selecting which is the most appropriate calls for careful consideration of the type of enclosure, the particular fire hazard and the suppression agent selected, and is best determined in consultation with one of Firetrace International’s authorised FIRETRACE distributors. These FIRETRACE-trained professionals use only genuine FIRETRACE components and will advise on hazard analysis, as well as carrying out the installation and commissioning.

Details of these authorised distributors are available by contacting Firetrace International at info@firetrace.com. ISO 9001-approved Firetrace International is headquartered in Scottsdale, Arizona USA with its EMEA offices in Gatwick in the UK, which can be contacted on +44 (0) 1293 780390. The company’s website is at www.firetrace.com

Nittan goes product galore at International Fire Expo Stand D60, Hall 3

UK fire detection manufacturer NITTAN will be launching a substantial number of new products at this year’s International Fire Expo (NEC, Birmingham, 11-14th May), including new detectors, sounder beacon bases and modules for UK back boxes.

The focus this year has been on expanding the company’s premier Evolution range to provide a truly comprehensive offering.

On the Evolution Conventional Product front, Nittan will be launching two new detectors: the EVC-IR dual band IR flame detector and the EVC-PY-IS conventional intrinsically safe optical detector.

But it’s Nittan’s Evolution Analogue range that will see the bulk of the new launches. These include two new detectors – the EV-PS optical detector with built-in sounder and dual line SCI and the EV-DPH dual optical/heat detector; Evolution Sounder Beacon bases with and without dual short circuit isolators; EV-AD2 address programmer; EV-MCP2 manual call point (with and without dual short circuit isolators); and a range of modules for UK back boxes. The modules – which have a new uniform, sleek design for aesthetic appeal – cover all varieties of applications, are all EEPROM Addressed (Programmer)



and can be used with the new IP65 Housing also now available from Nittan.

In addition to the new Evolution product launches, Nittan will also be inviting visitors to take a sneak preview at Sensortec products due to be launched in the near future, including a new range of modules, a Sounder Beacon base and call points.

To see and find out more about Nittan’s new Evolution product launches, please visit Nittan (UK) on stand D60.

For sales information, please contact:
Nittan (UK) Ltd
Hiple Street, Old Woking
Surrey GU22 9LQ
Tel: 01483 769 555
Fax: 01483 756 686
Website: www.nittan.co.uk

Glasgow Hospital opts for Draka Cabling Solutions



Draka is supplying in excess of 20,000 metres of cable for the new £100 million Victoria Hospital in Glasgow

Draka is supplying in excess of 20,000 metres of cable for the new £100 million Victoria Hospital that is currently taking shape in Glasgow. When completed in 2009, it will be one of the largest hospitals in Scotland and is expected to treat around 400,000 patients each year.

In addition to supplying OHLS® Halogen-free Firetufplus circuit integrity alarm cable for the Chubb fire detection and alarm system being installed by Forth Electrical Services, Draka is also providing cable from its recently introduced OHLS Halogen-free Saffire® range. These are two premium fire safety wiring cables, both of which are particularly suitable for applications where smoke and acid gas emissions would pose a significant threat in the event of a fire.

In common with all Draka cables, both cable types are third-party approved by the LPCB (Loss Prevention Certification Board) and/or BASEC (British Approvals Service for Cable).

"These Draka cables are ideally suited for hospitals, where fire safety is so critical," explained Bob Brotherton of Forth Electrical Services, Scotland's largest independent services contractor. "Evacuation is extremely difficult to achieve with bed-ridden patients, particularly as the new 41,500 square metre hospital is spread over three floors. So it is essential that, in a fire, the cabling performs as expected." He concluded: "We would not have considered using any cable that is not third-party approved."

The Draka Firetufplus circuit integrity alarm cable has proved its ability to maintain circuit integrity when exposed to fire. It provides 60 minutes fire and mechanical protection, followed by 60 minutes of fire, mechanical impact and water protection, exceeding the requirements of BS 5839-1:2002 (*Fire detection and fire alarm systems for buildings. Code of practice for system design, installation, commissioning and maintenance*). It has a twisted core construction to improve signal clarity, and from an installer's viewpoint, has the benefits of lower termination costs, ease of handling and installation, plus there is no need for any special tools or training.

The Saffire 6491 B cable is rated 450/750V and complies with BS 7211: 1998 (*Electric cables. Thermosetting insulated, non-armoured cables for voltages up to and including 450/750V, for electric power, lighting and internal wiring, and having low emission of smoke and corrosive gases when affected by fire*) and is a thermosetting, insulated non-sheathed single core cable.

The new Victoria Hospital was designed by HLM Architects and is a PFI (Private Finance Initiative) contract involving Balfour Beatty, Canmore Partnership and NHS Greater Glasgow & Clyde.

Derby-based Draka UK is the country's leading designer and manufacturer of fire performance cables, halogen-free power cables and building wires. The company is part of Netherlands-based Draka Holdings NV, which has over 9,000 employees worldwide.

Full details on Firetuf cables, Saffire cables and other Draka products are available by telephone on +44 (0)1332 345431, by fax on +44 (0) 1332 331237, and via email at firetuf@draka.com. The company's website is at www.drakauk.com

C-TEC third-party approved products at Firex 2009

C-TEC, the only UK fire panel manufacturer with third-party product certifications and factory process approvals from the LPCB, the BSI and the VdS, will be exhibiting its entire range of life-safety products at this year's International Firex.

Visit Stand D30 to see C-TEC's extensive range of third-party approved fire alarm control panels and power supplies, including the trail-blazing BF360-12. Currently short-listed for the prestigious FIA Product Innovation Award, this is the world's first 12V third-party certified EN54-4/A2 power supply unit, specifically designed to combat an area of fire alarm system non-compliance that is often overlooked, the connection of non-EN54-4 PSUs to 12V security system STUs/digital communicators.

Says Charlotte Manley, C-TEC's Sales Director: "With the growing emphasis on CPD compliance and CE marking of products, third-party approval is of paramount importance and we are very excited to be unveiling our new ranges at the show. The LPCB, the BSI and the VdS are recognised worldwide by governments and regulatory authorities, and certification from all three is the ultimate seal of approval for a manufacturer of life safety equipment."

C-TEC, a long-standing sponsor of the show which runs from 11-14 May at Birmingham's NEC, will also be exhibiting its extensive range of disabled refuge systems, call systems, induction loop amplifiers and the revolutionary Hush Button for Houses of Multiple Occupation.



For a free invitation to International Firex, contact the company's marketing department on +44 (0) 1942 322744.

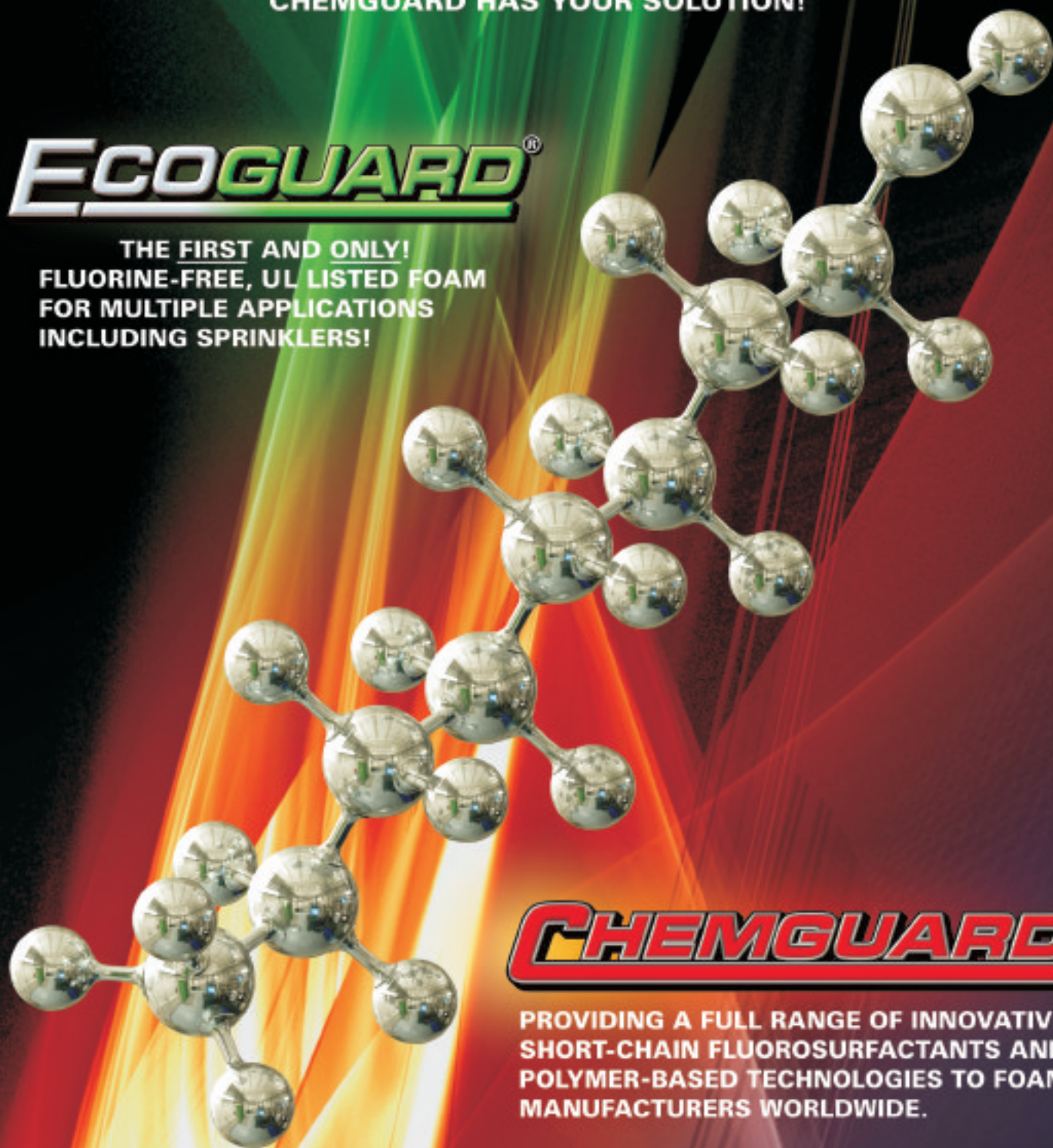
Alexandra Saint
MARKETING EXECUTIVE
C-TEC
Stephens Way
Wigan WN3 6PH
United Kingdom
Tel: +44 (0) 1942 403810
Fax: +44 (0) 1942 829867
Website: www.c-tec.co.uk

PROBLEM SOLVED!

FROM FLUORINE-FREE FOAM TO SHORT-CHAIN FLUROSURFACTANTS
CHEMGUARD HAS YOUR SOLUTION!

ECOGUARD[®]

THE FIRST AND ONLY!
FLUORINE-FREE, UL LISTED FOAM
FOR MULTIPLE APPLICATIONS
INCLUDING SPRINKLERS!



CHEMGUARD[®]

PROVIDING A FULL RANGE OF INNOVATIVE
SHORT-CHAIN FLUROSURFACTANTS AND
POLYMER-BASED TECHNOLOGIES TO FOAM
MANUFACTURERS WORLDWIDE.



CHEMGUARD - 204 South 6th Avenue, Mansfield, Texas USA 76063
OFFICE: 817.473.9964 FAX: 817.473.0606 www.chemguard.com

ON CALL 24/7:
800.222.3710

Movement puts its faith in Hochiki detection

Fire safety at the Lee Abbey Movement's conference, retreat and holiday centre at Lynton on the north Devon coast has been upgraded with the very latest HOCHIKI ESP (Enhanced System Protocol) analogue addressable fire sensing and sounding technology. The centre is run by an international community of around 90 people of all ages and 20 nationalities who live and work at the stunning 280-acre coastal estate, offering hospitality, rest, activity and teaching to thousands of guests throughout the year.

The Hochiki solution was chosen and installed by Barnstable-based Challenge Alarm Services and is linked to Morley-IAS fire detection and alarm control equipment in a network that covers both the original four-story building and the new Beacon Youth & Outdoor Activity Centre. The original building is stone and timber construction featuring very high and ornate ceilings. It houses the Movement's dining and kitchen facilities, chapel, bedrooms and community areas, while the new Beacon Centre provides an indoor



Hochiki sensors are providing the Lee Abbey Movement's conference, retreat and holiday centre with zero false alarms

sports hall and courts, plus additional sleeping accommodation.

Prior to commissioning the new

installation, fire safety at the centre depended upon an outdated system that relied entirely on manual call points to activate a solenoid to drop a flag down on an indicator panel. This has now been superseded by a five-loop addressable Morley-IAS panel with a repeater panel, interfaced into an advanced single-loop panel in the new Beacon Centre.

Commenting on the decision to select Hochiki, Justin Dennis, Challenge Alarm's Managing Director, said: "Hochiki sensors have such a negligible fail rate that we have never had a single faulty device or experienced a false alarm due to a product failure." He continued: "We have found that the fine mesh of the sensors has helped put an end to false alarms caused by insect ingress, which would otherwise be a very real prospect on this 900-acre coastal site, part of which is a working farm."

Hochiki Europe (UK) is headquartered in Gillingham, Kent, and has been active in the fire safety market since 1993. It is a subsidiary of the Tokyo-based Hochiki Corporation that this year celebrates over 90 years in the fire safety business. The company installed Japan's first public fire alarm in 1920 and developed the world's first addressable manual call point. Today, it is an international business that manufactures more than five million detectors every year, and has the largest fire test laboratory in the world.

Further information is available by telephone on +44 (0)1634 266 566, or via email at news@hochikieurope.com. The company's website is at www.hochikieurope.com

IS call point approvals extended to include ATEX combustible dust classification

The IS version of the conventional Waterproof Call Point (WCP) from KAC have been independently tested by SIRA and the approval has been extended from use in Zones 0, 1 and 2 gas atmospheres to include Zones 20, 21 and 22 combustible dust environments.

The units are designed for use in enclosed or open environments in fixed offshore platforms, petrochemical plants, flour mills, grain silos and other areas where a potentially explosive atmosphere may be present. Sealed to IP67 to prevent the ingress of dust or water, the IS WCP is interconnected to the fire system or controlled equipment through a suitable Zener barrier or galvanic isolator to limit the amount of energy available at the device.

In addition to the IS protection, the WCP provides installation efficiency, flexibility and full compliance with the CPD and EN54-11 requirements. The modular design utilises a special terminal block, where all initial installation cabling is terminated, enabling the wiring to be tested without the call point itself having to be installed. When commissioning the system the terminal block is simply connected to the back of the MCP in a simple, tool-less operation with no re-termination required and no time wasted.

Zones 0 and 20 define environments where



the potentially explosive gas or dust will always be present in the atmosphere. In Zones 1 and 21, an occasional presence of combustible gas or dust may be expected during normal operations and in Zones 2 and 22, the presence of combustible gas or dust is unlikely, but may occur for very short periods.

For further information:
Mark Thomson
KAC Alarm Company
KAC House, Thornhill Road
North Moons Moat, Redditch B98 9ND UK
Tel: + 44 1527 406655
Fax: + 44 1527 406677
Email: sales@kac.co.uk
Website: www.kac.co.uk

New VSO-LED combined platform sounder/beacon from Cranford Controls

Cranford Controls new VSO-LED combined platform sounder/beacon is proving to be an extremely popular addition to the ever increasing range of innovative and ultra reliable products from the industry's leading independent manufacturer of fire alarm sounders.

The VSO-LED takes advantage of some of the very latest technology in electronic design, including the use of piezo sounders to ensure excellent sound clarity and performance are achieved along with energy efficiency and reliability. Utilising the latest advancements in LED technology and circuitry, enables the finished product to provide superb 360° light output for all round clear visibility, which offers a logical solution to base sounder/beacon integration. The product is designed to provide a highly visible package that addresses the problem of identification in alarm state that troubles existing base sounder/beacon designs.

The combination unit is based on the well proven VSO platform sounder which is also available as a standalone sounder if required. The sounder uses switch selectable options for the tones and 3 stage volume controls, offering low, medium and high settings. An override tone is provided as standard which can be initiated by third wire selection if required from the panel or permanent selection at the time of install.

The VSO-LED is available in 4 tone and 32 tone variants, the 4 tone offers the installer a low



current option if required. The 32 tone version provides the full complement of tones enabling compatibility with all installs and site requirements. The 32 tone version also features all major world-wide tones including AFNOR, DIN and NEN spec tones, with a wide operating frequency range of 440Hz to 2900Hz. The tone list matches the popular VTG and VTB spatial sounders allowing a uniform sound across the installation.

The sounder main body is available in a choice of colours to match most leading brands of smoke detectors. The cleverly designed mechanical interface of the base sounder allows the mounting of most leading brands of detectors, please call the sales team for detector compatibility and colour choices. To enable the end user to tailor the product for each installation, a choice of lens colour is available including, clear, red, blue or amber. If the unit is to be used without a detector, a matching cover plate can be supplied which offers a neat and cost effective solution for the end user.

The VSO-LED has also been designed for ease of installation. With this in mind the product features a wide back entry to allow for the necessary wires to be easily fed through to the single point wiring connector.

IFP


For further information on the VSO-LED and information on any additional products to help fully equip your fire alarm system, please contact:

Cranford Controls
on +44 (0) 1420 592 444
or email
sales@cranfordcontrols.com

SEVO® Systems Launches its Flex™ Family of Clean Agent Systems Utilizing 3M™ Novec™ 1230 Fire Protection Fluid

SEVO® Systems of Lenexa, KS USA is pleased to introduce its Flex™ family of clean agent systems.

The Flex family of clean agent systems produced by SEVO utilizes 3M™ Novec™ 1230 Fire Protection Fluid. Currently Flex Systems range in size from 3 to 30 lbs, with coverage areas ranging from less than 50 cubic feet to 750 cubic feet.

Flex Systems require no electric power source to activate and can be accessorized with a pressure switch for process shut-down, a self-contained audible device, a manual release, and/or an electronic solenoid.

Flex Systems are offered in two configurations:

- Flex Focus™ system architecture allows for the system's polymer detection tubing to work as a flame or heat detector and also to deliver the system fire suppressant to the heart of the fire. A burst nozzle forms in the tubing when the tubing encounters temperatures in excess of 200°F, spraying fire suppressing Novec 1230 fluid directly to the flame source.

Flex Focus systems can be purchased in configurations that include limited amounts of pre-pressurized detection tubing, as well as standard configurations of non-pressurized tubing lengths (up to 50 feet). This easy-to-install technology allows for quick fitting inside the hazard. Plastic cable ties or similar wire ties can be used to secure the tube every 12 to 18 inches. A system pressure switch can be integrated to a fuel shut-off circuit or building alarm system. The unit is supplied with a sturdy mounting bracket and pressure gauge for visually monitoring the system pressure.

- Flex Multi-point™ system architecture uses the system's polymer detection tubing to detect the fire, while a system of piped nozzles delivers the fire suppressing agent.

Flex Multi-point systems can be configured with up to 125 feet of detection tubing and four balanced nozzles. Systems can include a pressure switch, self-contained audible, manual release or electronic release.

The e-Flex™ configuration includes a smoke detector option that allows for electronic release of the fire suppressant.

When configured with an electronic solenoid, the Flex Multi-point can be released by an electrical input supplied by any number of customer-supplied sources: a smoke detector, a fire alarm system, or a smoke sampling system.

A cylinder mounting bracket is included. A pressure gauge allows for ease of visual inspection.

Flex™ Systems produced by SEVO® are appropriate for a wide variety of A-class, B-class and C-class fire hazards to include the

following: CNC machine tools, EDM machine tools, computer closets and servers, telecom shelters, PLC's, motor controls, engine compartments, storage areas, haz-mat storage units, process machinery, UPS's, battery compartments, fume hoods and laboratory equipment, and test cells.

SEVO Systems was formed in 2001 to develop and commercialize a revolutionary new technology invented and marketed by 3M that represented a major breakthrough in halon replacement technology—combining high extinguishing efficiency with excellent environmental, health and safety properties. With the highest life safety margin of any clean agent, zero ozone depletion potential, 5-day atmospheric lifetime and a global warming potential of one, 3M™ Novec™ 1230 Fire Protection Fluid offers the market a long-term, sustainable alternative to halon and HFCs. SEVO worked hand-in-hand with 3M during the early development period following its discovery. SEVO represents a "safe environmental choice" and was the first OEM partner of 3M to commercialize a UL approved fire suppression

system using Novec 1230 fluid.

Novec 1230 fluid is designed to balance the need for extinguishing performance, human safety and low environmental impact. Novec 1230 fluid is not included in the basket of greenhouse gases identified by the Kyoto Protocol. The production of halon has been phased out in developed countries and will continue to be phased out in developing countries based upon the Montreal Protocol. With a zero ozone-depletion potential, an atmospheric lifetime of just five days (compared to 65 years for halon 1301) and a global warming potential of one (compared to 3220 for HFC-227ea or 3500 for HFC-25), 3M stands behind Novec 1230 fluid by offering an industry-leading 20-year warranty, the 3M Blue SkySM Warranty. For complete terms and conditions or to register your system for the Blue Sky Warranty, log onto www.3M.com/novec1230fluid.

For further information regarding the SEVO 1230 "True Retrofit™" halon "one for one" system log onto www.sevosystems.com

Cranford VCL Vocalarm™

Voice sounders have been available to the fire safety market for a while now but it is only within the last few years trends have been indicating an increase in the amount of Voice Alarm Sounders being installed, with a growing number of decision makers and installers being attracted to the clear and effective approach being delivered by these sounders.

The Cranford VCL Vocalarm™ has proven itself to be a highly popular choice with the fire and security markets due to its aesthetically pleasing looks and modern technical features making it suitable for a wide variety of applications and even the most distinguished of buildings. The VCL is available in red or white ABS and comes with an IP65 rating; aesthetically the product is very similar to the VPR ensuring a superb sound output.

There are two types of VCL Vocalarm™ available, the VCL01 and the VCL02. The VCL01 enables a two stage alarm via the addition of a continuous tone whilst the VCL02 allows for separate alert and evacuation messages to be programmed in. An extensive list of pre-programmed automated alerts and messages, suitable for a variety of facilities, are available for the VCL Vocalarm™ products but should you require a specific message Cranford are able to easily programme this for you.

The clear digital voice that provides each alert ensures an excellent response from those who hear it; installers are also discovering that upon hearing specific instructions a calm response is more likely. The selected message/messages and alert tone are kept in synchronisation via the use of a high crystal oscillator installed within the VCL Vocalarm™.

For further information on the VCL Vocalarm™ and additional products to help fully equip your fire safety system please contact Cranford Controls on +44 (0) 1420 592 444



VALVES, NOZZLES & ACCESSORIES

- DELUGE VALVES
- ALARM VALVES
- GONG BELL
- MEDIUM & HIGH VELOCITY WATER SPRAY NOZZLES



MONITORS

- MONITOR WITH BRONZE, ALUMINUM, STAINLESS STEEL & CARBON STEEL WATER WAY WITH FLOW UP TO 3300 GPM
- MASTER STREAM MONITOR NOZZLE WITH 400 TO 3300 GPM



FOAM EQUIPMENTS

- PROPORTIONER & BLADDER TANK
- INDUCTOR
- FOAM POURERS & CHAMBERS
- HIGH EXPANSION FOAM GENERATORS
- BRANCH PIPES



**HD FIRE PROTECT
PVT. LTD.**

C-3/6, Nandanvan Ind. Estate,
L.B.S. Road, Thane - 400 604, India

● TEL : +91 (22) 2582 6958 / 2582 6793

● FAX : +91 (22) 2581 2524 / 5596 9049

● E-MAIL : info@hdfire.com

www.hdfire.com



MDM Publishing Ltd
WORLDWIDE MEDIA

www.mdmpublishing.com

Hi-Tech Portal Site

FEATURING

- VIRTUAL ELECTRONIC MAGAZINES
- FULL VIRTUAL ARCHIVE OF BACK ISSUES
- BANNER ADVERTISEMENTS
- LIVE REAL PAGE TURNING SOFTWARE
- FULL PDF FILE DOWNLOADS
- EVENTS PAGE
- LIVE LINKS
- AND MUCH, MUCH MORE ...

**SIMPLY NO
COMPARISON**

MDM Publishing Ltd, The Abbey Manor Business Centre, The Abbey, Preston Road, Yeovil, Somerset BA20 2EN, UK

Tel: +44 (0) 1935 426 428 Fax: +44 (0) 1935 426 926

www.mdmpublishing.com

www.mdmpublishing.com

The new **Multipoint** ASD detector from Rafiki now does it all!!



Three smoke detectors

Three heat detectors

Combined smoke/heat detector

Full alarm sounder

Strobe

End-of-line device/loop isolator

For more information on the Multipoint ASD Detectors
contact your supplier

Rafiki Protection Limited

31 Springvale Industrial Estate,
Cwmbran NP44 5BD
United Kingdom

t: +44 (0) 1633 865558

f: +44 (0) 1633 866656

e: fse@rafiki.biz

w: www.rafiki.biz

Testifire: innovation and benefit profile

By Phil Bartlam

Sales & Marketing
Director, Detector
Testers (No Climb
Products Ltd)

Testifire is the new tester from detector testers. Equally suitable for single sensor, multi sensor and multi criteria detectors, Testifire tests old, new, simple and sophisticated fire detectors and presents benefits that are as numerous as its innovations. This article profiles both.

Evolving challenges

Fire and life safety detection evolution has in recent years been characterised by increasingly sophisticated sensing seeking to defeat false alarms through discrimination between 'false' and 'real' stimuli. This has been accompanied by the advent of multi (or combined) sensors comprising independent (and/or inter-dependent) technologies. Meantime, carbon monoxide sensors now appear in single sensor and multi sensor detectors (in both life and fire safety applications).

Alongside the above we now 'enjoy' increasingly stringent chemical and environmental directives that impact aerosols and other traditional test media. Wide ranging health and safety regulations encompass transport, storage, pressurisation, chemicals and particulates and, in whatever field we find ourselves, there is a need for proof of procedures and a traceable, accountable documentary evidence trail, matched only by a constant and increasing pressure to reduce the time, cost and price of everything.

Testing evolution

On the surface, the technology that has enabled detection advances might be seen as having passed by fire detector test tools. Aerosol smoke detector testers were first used in the 1960s (patented by Cerberus in 1963) and, aside from formulation and delivery enhancements led by No Climb (now detector testers), the basic technology of pressurised chemicals has remained unchanged as drawbacks have multiplied. Heat detector testing remained a major challenge until No Climb produced and patented the cordless heat detector tester in the 1990s and CO detector testing has relied on inefficient pressurised CO canisters. Meanwhile, there has been no link between the tester and the audit/field management software programmes which have grown in popularity/use over recent years.

Innovation overview

Testifire is, however, hugely innovative and totally unique – the result of a 5 year research programme and more than 20 international patents. A radical contrast to previous products in this field Testifire delivers 'intelligent' CO, Smoke and/or Heat functional test stimuli from a single device. Significantly enhancing productivity Testifire permits previously 'un-testable' detectors to be properly



tested in line with standards and, through its RFID and Bluetooth based Communications Module, Testifire can provide the audit trail's missing link between test equipment and field reporting systems (with applicability to intelligent as well as conventional detectors).

Innovation in stimuli generation solves old and new problems

Testifire generates its intelligent stimuli on demand, without the need for the pressurised storage required by aerosol canisters the world uses today. Smoke is generated from minute quantities of a specially-formulated fluid supplied in a replaceable capsule. In use the fluid is heated to a vapour and nucleation is then forced by a moving air stream with the result that 'real smoke' is simulated cleanly and safely. CO is generated similarly and equally safely on demand from the controlled heating of activated carbon tape (again supplied in a replaceable capsule). The heat both



processes require is generated through energising a miniature element by means of rechargeable, energy-efficient Nickel Metal Hydride cells. The heat can, of course, also be used solely for the purpose of testing heat detectors by means of a 'beam' of hot air specially targeted at the heat sensor. Finally, the fan that delivers these stimuli to the sensor can also blow them clear when they are no longer needed – enabling rapid detector re-reset with no repeat alarms.

Recent developments in detection technology have been challenging for field test equipment. High levels of data processing within fire panels and sophisticated sensors designed to defeat false alarms have been increasingly impervious to traditional test media such as aerosol canisters. In point of fact some detectors have become almost 'un-testable in the field' and this together with the need (but often inability and sometimes unwillingness) to test more than one sensor in a multi sensor detector is testing the faith, credibility and professionalism of the industry as much as detectors in some areas of the world. Testifire changes that completely:

- Optimised smoke characteristics, together, if necessary, with accompanying CO or heat stimuli enables field testing of complex detectors, some of which simply can not be properly tested any other way

- Enhanced heat beam and multiple heat settings render testable a wider range of heat detectors
- Individual or, if required, multiple simultaneous stimuli from the same device enable not only 'witness' tests for the first time on detectors with complex algorithms but also significant time and productivity enhancements for all types of fire detector

The changes have other advantages though – the design of Testifire is such that, unlike aerosol canisters, which can be applied too close to a detector possibly leaving a liquid residue on it, Testifire – by design – cannot be inadvertently misused in this way. For those that did not misuse aerosols there is the advantage of wider temperature operating ranges too.

Innovation in physical design and size

Testifire's 'traditional tester shape' belies some of the innovation behind Testifire's physical design and size. Over 70 custom-moulded components made from 9 different polymers and rubbers make up the product's complex electromechanical design. All of this is of course, of little interest to the user but, by creating Smoke, Heat and CO stimuli in a single test unit, the several test devices previously required to carry out routine detector maintenance have been reduced to just one. The result is:

- less to transport, carry and store
- less bulk and less weight for the user on site
- nothing to interchange on the end of a pole at height
- significant benefits to the user in time taken to test

Innovation in environmental, hazard and health and safety solutions

Aerosol canisters are under pressure in more ways than the obvious. Non flammable propellants have high GWP (Global Warming Potential) ratings and are becoming increasingly expensive. Cheaper, flammable propellants are under fire not just for their inherent issue of flammability but also for their high VOC (Volatile Organic Compound) ratings. Since all aerosol canisters are pressurised, health and safety regulations mean that transport and storage can be difficult and expensive. This is not just a problem for manufacturers and re-sellers. Costs are (and will increasingly be) passed on where possible through higher prices to users. In brief, legislation is closing in on aerosol canisters and costs (and prices) are rising. Testifire avoids these issues:

- Replacing pressurised canisters with benign capsules eliminates the above hazard drawbacks and their associated costs
- Introducing capsules addresses both the GWP and VOC concerns while retaining safe, non-flammable test stimuli
- On-demand generation of safe-to-use levels of real CO in particular addresses concerns over testing of CO detectors properly, utilising true and appropriate stimuli

Innovation in automation compliance and audit

Testifire's Communications Module permits reading from, and writing to, RFID tags fitted to detectors either at time of manufacture, during, or after, field installation. Through a Bluetooth link

these tags communicate with a PDA loaded with appropriate software. The result is:

- auto configuration of tests with Testfire automatically implementing the correct test or test sequence for the detector, taking the confusion or complexity out of testing single or multi sensor detectors – new or old
- documented traceable reports with data stored on the RFID tag fitted – and always available – at the detector itself as well as within software linked to the PDA (and taken off-site).

Innovation in the ability to evolve and adapt

Testfire's intelligence allows for its evolution, even while in the field. Each Smoke or CO capsule contains data which controls the functioning of the unit. This means that performance can be enhanced in units which are in the field, simply by plugging in a revised capsule at a later date. A web-based upgrade facility also provides the ability to upgrade the product with changes to the firmware. This dual update concept helps the field-based product develop in line with advances in detector testing.

Time and productivity benefits

The '4 tools-in-1' design principle means not just less to carry but also immediate switching between tests and even, in some cases, up to three tests at the same time (where this has been enabled by detector and system manufacturers).

Reported time savings of almost an hour per day are common.

This, the rapid activation of detectors, the clearing cycle that reduces time spent awaiting fire panel resets and the lack of repeat alarms mean detectors can be tested quicker. Reported time savings of almost an hour per day are common. Time is money and Testfire saves both.

Refill capacity, transport, storage and environmental benefits

Through eliminating aerosol canisters the refill capsules can assist in the fight against climate change and against the pollutive aspects of VOC's. At a commercial level the capacity of both CO and Smoke capsules is significantly more than that of an aerosol canister (more tests per refill). Capsules, unlike aerosols, are also not classified as hazardous and no special arrangements are required either for their transport or their storage. As a result they can be supplied more easily and more cheaply (not to mention more safely) than their pressurised counterparts and no special handling is required by the user.

Compliance benefits

Testfire's simultaneous stimuli capability can render the testing of multi sensor detectors as quick and cost effective as single sensor detectors. More importantly, as Testfire is the only way of field testing certain sophisticated and complex detectors its use can literally represent the difference between a demonstrably dependable system and one which cannot be showed to be relied upon.



The audit and accountability trail that Testfire offers, through use of the communications module, assists not only in the efficient management of Service and Maintenance personnel but also the provision of documented evidence where required that given detectors have been visited and the dates, times and personnel conducting that visit.

Summary – Innovation that delivers benefits

Innovation is not enough. Today's society seeks benefits and Testfire offers them in abundance.

Testfire has been designed not only to meet the many evolving challenges facing those testing detectors in a demanding world but also for ease of use and low cost of ownership. It has been approved for safety and EMC to European standards and is currently undergoing third-party certification in the USA and Canada. Fire detector manufacturers around the world are recommending it for testing their detectors.

Today's society seeks benefits and Testfire offers them in abundance.

Use of Testfire means less time and cost on service and maintenance while achieving best possible testing of modern as well as older systems. Eliminating accidental/inadvertent misuse of aerosols removes the danger of detector damage and even risks of false alarms that might result. Reducing costs, enhancing reliability, avoiding misuse and minimising false alarms can enhance not only the performance of fire systems but also the reputation, credibility, reliability, productivity and profitability of those whose job it is to test the systems on which we all depend.

IFP



For more information visit:
www.detectortesters.com
www.testfire.com

Retrofit with SEVO 1230

Clean Agent Fire Suppression Systems

Designed with

3M Novec™ 1230



Fire Protection Fluid

Retrofit with SEVO 1230 Systems:

- Utilize existing piping
- 1 to 1 cylinder/nozzle replacement

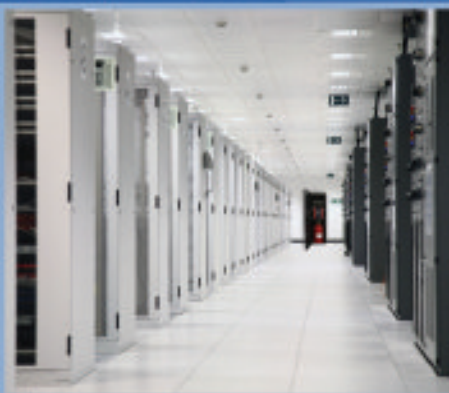
• Existing Halon 1301 Systems

• Existing HFCs Systems

& High Global Warming Materials

No other halogenated alternative can match:

- Zero Ozone Depletion
- Atmospheric Lifetime of 5 days
- Global Warming Potential 1
- Life Safety Margin 67-150%
- 20 year environmental warranty



www.sevosystems.com
info@sevosystems.com
Phone: 913.677.1112

SEVO  **SYSTEMS**
The Safe Environmental Choice

14824 W. 107th Street
Lenexa, KS
USA, 66215



Innovative Approaches to 21st Century Special Hazards Fire Suppression

By Richard Niemann

Engineering Manager,
Product Development,
SEVO Systems

Since the world started addressing the rapid loss of the atmospheric ozone layer under the Montreal Protocol, there has been a continuing effort to identify alternatives and to replace halon in fire suppression.

First generation halocarbon alternatives, such as PFC's and HFC's have been determined to negatively impact global warming and are coming under increasing regulatory scrutiny. Non-halocarbon alternatives, such as water, inert gas, aerosols and others have been found generally best suited to specialized applications, but not all have been successful in replacing halon 1301 in total flooding applications. The most promising new alternative to halon, offering similar total flooding ability while meeting ever increasing demands to reduce the impact on global warming, is the fluorinated ketone known in fire protection standards as FK-5-1-12 (3M™ Novec™ 1230 Fire Protection

Fluid). From a practical standpoint, FK-5-1-12 allows for a multitude of application techniques as it is a liquid under ambient conditions. Engineers may now design practical fire suppression applications that would be impossible using halocarbons that are gaseous at ambient temperatures.

Industry is often slow and resistant to change when it comes to addressing fire protection by means other than using existing standards. New fire protection standards can take years to establish and they require considerable debate and consensus, often by those who may have a particular interest in the "status quo". FK-5-1-12, being a liquid at ambient temperatures, allows for



alternative application techniques that give fire protection engineers tremendous flexibility in the design of fire suppression systems either with existing "pressure vessel" technology or with new "non-pressurized" technologies.

At the Halon Options Technical Working Conference (HOTWC) in Albuquerque, NM in 2000, Richard Gann of NIST (National Institute of Science and Technology) gave the keynote address, titled "A Millennial View of Fire Suppression".¹ In this address, he made reference to the future of fire suppression, predicting that at the end of the 21st century there would be portable "plug and play" systems which would employ next generation suppressants which would be effective while meeting environmental objectives. Having realized that prediction early, SEVO® Systems of Lenexa, Kansas USA developed the tools which meet the dual criteria of efficiency and environmental safety. One approach was to utilize design efficiency and achieve cost savings by recognizing, and then utilizing, the inherent properties that differentiate a gas from a liquid and then applying these techniques to existing system technology. This led to the development a 500 psi system (SEVO® 1230 "True Retrofit™" System) that allows, in nearly 90% of the cases experienced to date, utilization of existing 360 psi halon and HFC pipe networks while conserving floor space for cylinders using FK-5-1-12. This system could not be envisioned under current standards that originate from the use of ambient gaseous alternatives such as HFC's and inert gases. The increased pressure to 500 psi cannot be safely accomplished with a gas such as HFC-227ea or HFC-125 while using conventional 500 DOT/TC welded cylinders in designing a fire suppression system.

SEVO Systems was the first fire suppression system manufacturer to adopt FK-5-1-12 as an alternative to halon, as well as to the first generation halocarbon alternatives, for total flooding applications. An innovative company, embracing the new FK-5-1-12 as a unique alternative, it helped usher in the second generation of halon alternatives by achieving the first UL listed system using FK-5-1-12. SEVO Systems recognized early that the liquid FK-5-1-12 worked like a gas and subsequently designed the "True Retrofit™" system to take advantage of these unique properties.

Confirming SEVO's commitment to meet the

demands for sustainable fire suppression via "fluid" technology, the following product platforms are completed or underway to utilize these approaches in future advances in fire suppression technology.

SEVO Systems current product line successfully integrates smart fire suppression design with desirable environmental preservation. Included in the SEVO family are:

The "True Retrofit™" system maximizes the FK-5-1-12 product performance while utilizing standard welded 500 DOT/TC low-pressure cylinders. The active discharge pressure after cylinder/valve and manifold is 416 psi or less. Utilizing this maximum operating pressure allowed for a product line to be created that greatly increased the ability to advance the conversion from Halon's and HFC's using existing pipe networks. This "one to one" innovation reduces the labor and time to retrofit a halon system, reducing the cost to the end user.

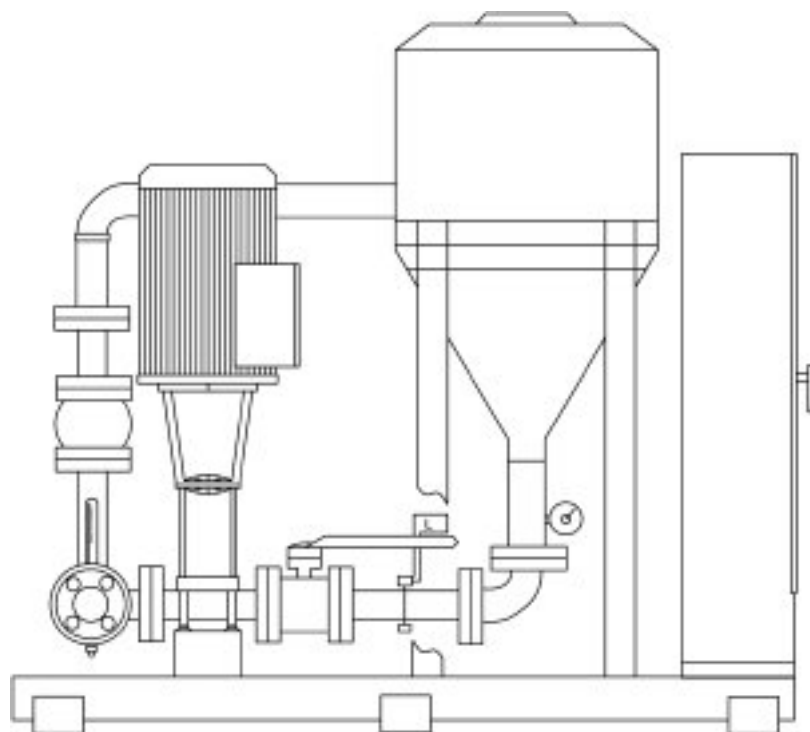
The Flex™ Family of suppression systems was developed to take advantage of new local application standards, reducing cost, increasing speed of protection, adapting to change in the industry. Flex Systems are offered in two configurations: "Focus™" or "Multipoint™". A "Focus" system utilizes the tubing as both the detector and the release of the fluid. A "Multipoint" system utilizes tubing as the fire detector while a system of piped nozzles delivers the fire suppression agent. The SEVO Flex family of systems uses Chapter 6, "Local Application", recently adopted into the NFPA 2001, 2008 Edition, for introducing an innovative approach to protecting the component versus total flooding an entire space. By focusing on the individual piece of equipment and/or cabinet, Flex system equipment can be utilized to bring suppression to a high value asset. The Flex system becomes an integral part of the asset it is protecting by reducing the time it takes to respond and increasing the speed of suppression, thereby limiting a fire event and its subsequent damage. Concentrating on the high value asset and not the space in which it is enclosed can be substantially less costly. Flex systems are currently available in gaseous discharge with future product line extensions to include a misting application designed to maximize efficiency in extinguishing performance.

Unitor 1230 Clean Agent Fire Extinguishing System for the Offshore and Maritime Industry

Wilhelmsen Ships Equipment have industrialized and adapted the SEVO 1230 System for the maritime industry. The Unitor 1230 Clean Agent Fire Extinguishing System is designed as a total flooding system for machinery spaces on Category A, cargo pump rooms on tankers, cargo compressors rooms and other spaces onboard vessels or on offshore installations needing fire protection.

The system can be applied on merchant marine and offshore structures as design is in accordance to SOLAS and in compliance with Class requirements.

All components of the maritime application of the system are designed for optimum systems performance. The system has small pipe dimensions, saving installation space, weight and lowering total installed cost. It has the largest nozzle



coverage designed specifically for the offshore and marine industry, with a unique nozzle discharge pattern.

Technical Design of Maritime application

The Unitor 1230 Clean Agent Fire Extinguishing System comprises FK-5-1-12 liquid, stored in steel cylinders, pressured with nitrogen to 34.5 bar (500 psi) at 21°C (70°F), connected via cylinder valves, flexible hoses or pipes to distribution pipelines with discharge nozzles.

Different types of installation can be used depending on storage place accessibility. As a modular system the cylinders are stored directly in protected compartments or adjacently outside. As a centralized system, the requested amount of extinguishing fluid is stored in central cylinders out of protected spaces and distributed as needed via distribution valves. The system can also be installed as a combination of these.

SEVO Systems is currently developing a next generation low pressure delivery system that utilizes uncharged, low pressure storage containers. SEVO envisions it to be the future for compartment and containment applications for marine use.

Closed Filling Pump Station technology allows onsite refilling of the FK-5-1-12, giving the user increased capability to refill a discharged system within 24 hours after discharge as required under NFPA 2001. This technology also fulfills the need for a back-up reserve system. Traditional halon and HFC systems often require a reserve supply in many locations due to the time it takes to get a system to an off-site refill location, thereby doubling the initial equipment cost. The Closed Filling Pump Station allows for fast and easy re-filling of cylinders with the FK-5-1-12 to put fire protection systems quickly back into operation.

Clean Agent Pumping System technology allows FK-5-1-12 delivery to multiple combustible hazard areas from a single uncharged (ambient pressure) storage supply. This product can be

expanded and adapted to use multiple extinguishing mechanisms i.e. liquid, mist or as a gas in either local applications or total flooding. By taking advantage of the unique characteristics of the sole second generation "fluid" to replace halon and HFC's is leading SEVO Systems in a "revolution of innovation" in the application of clean agents into the fire suppression industry.

SEVO Systems was the first systems manufacturer to adopt the innovative technology of 3M Novec 1230 Fire Protection Fluid into fire suppression systems. The company is uniquely positioned to change the face of the industry with these innovative approaches to effective clean agent fire suppression. With only half of its 10 step product development package rolled out to the public so far, future products hold the promise of further advancing fire suppression technology. By taking advantage of the unique properties of the fluid and adapting to the changes in fire standards, SEVO will be a major contributor to the industry to meet the needs for the future. SEVO's vision of the future in the fire protection industry is for fire suppression systems that do not require pressurized cylinders. Having fully adopted 3M Novec 1230 Fire Protection Fluid as the only true sustainable alternative to halon, a fluid backed by 3M's Blue Sky Environmental Warranty, to its entire fire suppression product line and in future developments, SEVO is uniquely positioned to meet the needs for sustainable fire suppression for critical needs long into the future.

SEVO Systems is an international company focused on sustainable clean agent fire suppression. SEVO is a registered trademark of SEVO. Flex, "True Retrofit", "Focus" and "Multi-point" are trademarks of SEVO Systems. 3M and Novec are trademarks of 3M. Blue Sky is a service mark of 3M.

IFP

1. Gann, Richard G. 'A Millennial View of Fire Suppression.' Halon Options Technical Working Conference. Albuquerque, NM. 2 May 2000. *BRFP Publications Online Library*. BFRl Publ. 27 Apr. 2009 <<http://www.fire.nist.gov/bfrlpubs/fire00/PDF/f00082.pdf>>.

When false alarms are worse than inconvenient



Discovery is a high specification fire detector designed to work in a wide range of environments and keep false alarms to a minimum.

- uniquely, all five sensitivity modes have been approved to meet the requirements of EN54
- filters out transient high levels of smoke or heat
- compensates for sensor drift

In addition to the usual ionisation, optical and heat detectors, Discovery includes carbon monoxide and multisensor detectors.



to find out more:

www.apollo-fire.co.uk/discovery

call us on:

+44 (0)23 9249 2412

email us at:

marketing@apollo-fire.co.uk



The multiuse nature of retail and commercial space presents its own set of fire system challenges



Buying into Retail and Commercial Fire Safety

By Rowland Davies

Marketing Services
Manager, Apollo Fire
Detectors Limited

Commercial and retail developments can be some of the most challenging applications when it comes to designing and specifying a modern fire detection system.

With extremes of scale and architectural design, new building materials and techniques, as well as complex layouts and levels, the fire system requirements of these buildings can be both specific and wide-ranging.

Large glass atria commonly found in modern retail and commercial complexes, for example, can present difficulties – not only in terms of access during installation and maintenance, but also because the highly reflective glazing can render the more common types of detection unsuitable. For example, in one central London shopping area with a glass ceiling, flame detectors were specified over beam detectors because sunlight could cause potential false readings.

Furthermore, the multiuse nature of retail and commercial space – which can often include both

small and large-scale shop units, offices, storage space, parking, restaurants, bars and cafes – presents its own set of fire system challenges. In particular, changes in environmental conditions between different areas in close proximity present a number of sources of potential false alarm.

In addition to securing the safety of people, it is critically important in commercial and retail applications to protect assets – such as valuable stock, archived documents and vital equipment – from fire risk and avoid unnecessary interruption to business.

To achieve the right balance, therefore, it is necessary to ensure that the performance of the fire detection system is not adversely affected by its environment and that it is equipped to minimise the likelihood of nuisance alarms.

Apollo Discovery technology lies at the heart of the fire detection system at Dover Docks, Europe's busiest and most successful ferry port



Fire safety in practice

Fire detector manufacturers have been quick to respond to the wide-ranging requirements of protecting modern retail and commercial premises from the risk of fire. Considerable resources continue to be invested in developing technology that is appropriate for a range of environments, while also keeping pace with the needs of increasingly complex building design.

Apollo's Discovery range of intelligent fire detectors has been specifically developed to reduce false alarm incidents while being environmentally adaptable. The range is widely used in retail and commercial environments across the world.

smoky environments such as loading areas where diesel forklift trucks are operating. Response mode three is a general-purpose setting.

While the ability to select different levels of sensitivity dependent on environmental conditions makes Discovery fire detectors particularly adaptable, it is arguable that the inclusion of a multisensor in the range does the most to combat false alarm incidents.

Equipped with an optical smoke and thermistor temperature sensor, Discovery multisensors can be programmed to operate as a smoke detector only, a heat detector only, or as a combination of both. If an 'in combination' selection is made, the signals from each sensor are

considered in relation to each other. This allows protection during fire verification and is also proving useful in multifunctional retail complexes where transient levels of smoke and steam from restaurants and coffee shops could cause false readings.

Apollo continues to refine the Discovery range to meet changing market requirements. Recent improvements include an upgrade to the electronics in Discovery detectors so that they are capable of providing heat and smoke outputs separately, which could be used in control panels as part of a routine to further reduce false alarms.

In addition, when the Discovery heat detector is

Considerable resources continue to be invested in developing technology that is appropriate for a range of environments, while also keeping pace with the needs of increasingly complex building design.

Evolved from the proven technology behind Apollo's acclaimed XP95 range, Discovery gives specifiers and users five panel-selectable bands, inbuilt drift compensation, a non-volatile memory and fail-safe operation. The range comprises ionisation and optical smoke detectors, a heat detector, a multisensor (combined smoke and heat) detector and a manual call-point. There is also the Discovery Carbon Monoxide (CO) fire detector, which is good at detecting deep-seated fires and requires only very low power.

Each detector in the Discovery range can operate in one of five response modes, any of which can be selected from the control panel. Each mode corresponds to a unique response behaviour, which can be broadly related to sensitivity to fire. Whatever the type of detector, mode one will give higher sensitivity to fire than mode five. Therefore, Discovery detectors set to mode one will be most suitable for environments in which sources of unwanted alarms are rare, for example cleanrooms and computer suites. At the other extreme, response mode five will be suited to more dusty or

operating in its most sensitive mode (A1), detection is now measured at the rate-of-rise rather than at a static level for greater accuracy.

A Sounder Beacon Base, which combines audible and visual alarms plus isolation in a single unit, is another recent addition to the Discovery range. The new device makes system design and installation simpler by eliminating the need for multiple warning devices. The sounder and beacon can be set independently for maximum flexibility, with volume and tone settings selectable from the control panel. For ease of commissioning, the volume can be adjusted locally using a magnetic wand. The device offers 15 tone pairs including an electronic bell, which could be used for signalling shift changes, for example.

Making the case for Discovery

Apollo Discovery technology lies at the heart of the fire detection system at Dover Docks, Europe's busiest and most successful ferry port. Handling some 14 million private and commercial passengers, 2.5 million cars and 2 million lorries travelling



*Leadenhall Market:
Flame detectors were
specified over beam
detectors at Leadnheall
Market because sunlight
coming through the
glass ceiling could cause
potential false readings*

through it each year, the demands on fire safety provision are wide-ranging.

Modern international passenger terminals, from ferry ports to train stations and airports, incorporate a wide range of different environments. Designed for comfort and convenience as well as function, it is no longer the case that you check in, sit in an uncomfortable departure lounge and then leave – there are now a whole range of retail, commercial and leisure outlets within the terminal complexes – each with their own specific fire detection requirements.

In the case of Dover Docks, the Harbour Board

and seven miles of network cabling.

Every device is monitored constantly at three separate locations, with any loss of signal investigated immediately. The whole network reports through to the police station situated at the edge of the Eastern Dock.

Evacuation procedures are tightly controlled and take into account the large volumes of traffic and people spread over a wide area. A pre-alarm function is used to isolate an area at risk, enabling staff to check the potential problem and restrict or evacuate the area as necessary, so minimising disruption.

As commerce moves away from industry towards professional services and retail moves from the high street to the convenience of large-scale and bespoke shopping centres, retail and commercial premises are evolving.

is responsible for managing the Western and Eastern Docks situated two miles apart, including a wide array of passenger and freight buildings from cruise and ferry terminals to immigration holding areas and cold stores. Buildings, manned and unmanned, accommodate visitors and staff and include car parks, offices, an IT centre, retail outlets, high voltage sub-stations, workshops and storage areas containing hazardous materials. In addition, the Dover Harbour Board is landlord to a number of Georgian flats along the seafront and has to manage a large number of listed buildings.

To accommodate the diversity of activity across the site, the Discovery system includes more than 2,300 devices – incorporating optical, ionisation, beam and aspirating detectors – 44 control panels

Conclusion

As commerce moves away from industry towards professional services and retail moves from the high street to the convenience of large-scale and bespoke shopping centres, retail and commercial premises are evolving. Often combining a range of different environments within a single building, the fire system requirements of these developments can be complex.

Specialist manufacturers of fire detection products like Apollo are committed to responding to the requirements of its retail and commercial customers and provide technology solutions that even anticipate the challenges of these applications as they develop to meet modern business demands.

IFP



EN 54 PART 20



Are you
ready?

Be prepared with Xtralis VESDA

Xtralis ICAM® detectors are now EN 54-20 approved. Visit us at stand J20 in Hall 3 at International Firex to find out how both VESDA and ICAM can help you be EN 54-20 ready.

By June of 2009, aspirating smoke detection (ASD) solutions deployed across Europe need to comply with the new **EN 54-20** European product standard. **Are you ready to meet this challenge? Xtralis® is.**

Xtralis **VESDA®**, the world's leading brand of ASD solutions, was first in the fire industry to meet the demanding requirements of **EN 54-20**. So you can rest assured that with Xtralis VESDA you will have a powerful, compliant solution to protect safety, critical infrastructure and business continuity today and well into the future.

To learn how VESDA can help you be ready for **EN 54-20**, go to www.xtralis.com/en54-20 or contact us at **+44 1442 242 330**.



Smoke Detection | Video Surveillance | Access Control | Intrusion Detection | Command and Control



Keeping a Watchful Eye on Industrial Fire Protection

By Keith Rose

Fire Safety Engineer at
Sembcorp Protection
Group on Teesside

Industrial premises come in all shapes, sizes and vintages, each with its own fire safety challenges, so there is no “one-size-fits-all” fire protection solution. And while serious industrial fires are, thankfully, relatively infrequent, the impact of a major blaze can have catastrophic consequences for the business, employees, the environment and the local community.

Before turning our attention to fire protection issues, we ought first to take a brief look at precisely what constitutes an industrial building, as there are one or two myths that need to be dispelled. For a start, the term “industrial” embraces everything from the small industrial park engineering workshop to the latest hi-tech production facility, and from the relatively low risk manufacturing unit to the high-hazard chemical and petrochemical plant. There is also a wide spectrum of warehouses and logistics centres, some of which are in operation 24 / 7, while others are hastily commissioned for the short-term storage of seasonal goods.

Industrial premises around the world have been constructed to comply with a number of building codes and standards. Indeed, a significant proportion pre-date contemporary regulations

in the UK, for example, we have a considerable stock that was built to comply with much earlier editions of the Building Regulations and the now-revoked Fire Certificate (Special Premises) Regulations 1976. In fact, a significant number even pre-date the Building Regulations that came into force in 1965, and were constructed during the time of the old Building Bylaws, which varied across the country.

This means that there are an unspecified



number of industrial buildings still in use that can be characterised as:

- Being built to lower construction standards than those prevailing today.
- Incorporate building materials that are no longer acceptable, such as asbestos and cladding and lining materials with unacceptable spread of flame or other fire performance characteristics.
- Being built to passive and active fire safety standards, in terms of the overall degree of fire protection, compartmentation, fire stopping, fire detection and fire suppression that would be unacceptable in industrial premises built today.
- Now being used for purposes other than those originally intended, and possibly without approval for change of use.
- Containing substantially different fire loadings and risks than was originally taken into account.
- Now having environmental or neighbouring challenges that did not exist when the premises were built.

Added to these considerations are a number of factors of day-to-day manufacturing operation that have a major bearing on industrial fire safety.

The “pile-it-high” risk

For economic and business efficiency reasons, the current generation of industrial premises is highly automated. They are characterised by the “maximum stock in minimum space” ethos, with high-level racking and narrow gangways designed to allow access by fork-lift trucks and side loaders

with little room to manoeuvre. These challenges are compounded by the commonplace “just in time” stock-holding approach, where customers maintain minimal stock levels and rely on the manufacturer to provide a fast turnaround of orders.

This can so easily result in seasonal or fast-turnaround stock being stored in every conceivable space without sufficiently considering the implications for the safe evacuation of employees in a fire, or the safety of the emergency services tackling a blaze. In some cases, the lack of proper stacking can have a major impact in the event of a fire, further adding to the risk of blocked evacuation routes or injury to employees or firefighters.

It is also by no means unusual for factories to allow storage to spill over into adjoining areas during periods of peak demand, utilising forecourts, yards and loading bays. But, it is not just the increased density of goods that needs to be considered. Careful attention also needs to be paid to the fire load characteristics of what is inside the building, and any potential environmental or toxic risks that these goods might have. Highly flammable plastic shrink wrapping, for example, is now commonplace, as is the mass storage of highly combustible cardboard and plastic packaging materials, including plastic pallets.

These factors raise the whole question of fire risk assessments for industrial premises. While the need for them should now be widely understood – and in the UK conducting them is a statutory obligation under the Regulatory Reform (Fire Safety) Order 2005 – is the importance of treating them as an on-going activity sufficiently appreciated by industry? There is a strong case for advocating that fire strategies for industrial premises need to be particularly robust and reliable; even for suggesting that fire risk assessments should be management’s constant concern, with a daily interest being taken in any activities that may adversely impact on fire safety.

The empty building scenario

Of course, being unused or unoccupied does not remove the building owners’ responsibilities. Even if the building is properly decommissioned and mothballed; their liability extends to the safety of firefighters who may be called upon to tackle a blaze in the empty building.

So, very careful thought has to be given to fire safety precautions before shutting down existing fire detection and firefighting installations or cancelling maintenance regimes. Empty premises are also particularly prone to vandalism and arson, so effective security needs to be implemented to make sure that essential fire safety equipment has not been damaged or stolen.

Assessing the neighbourhood impact

Unless the owners and managers of an industrial premises have implemented “prompt detection,



283.5

In today's business climate, we believe a company should be held accountable by more than just regulations and government entities. At OCV, we answer to you-the customer-and you expect a high standard, demand solutions that work, and insist on products of quality.

We also believe in longevity and commitment. Our Sales and Engineering teams offer new talent combined with seasoned professionals for a sum of over 283 years of experience. With companies failing and economic conditions changing overnight, isn't it nice to know you will get an answer every time you need help with an application?

OCV wants to be your partner for managing fluid application needs - large or small. OCV continues to develop its broad spectrum of technical expertise, turning field experience and problem solving knowledge into a refined offering of services and state-of-the-art product.

At OCV we put customer service at the top of our list. Our slogan says it best: Global Performance. Personal Touch.



Global performance. Personal touch.



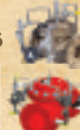
2009
129
Pressure Reducing

2003



108fps
Pump Suction Control

1996



116FC
Pneumatic/
Hydraulic Deluge
127-45NR
Fire Flow Bypass

1986



127-3FC
Pressure Reducing

1983



108-2hp
High Pressure Fire
Pump Relief

1980



108FCA
Fire Pump Relief

1974



3331
One Way Altitude

—



65FC
OCV enters the
fire market

1952



OCV Founded





“What if” is a good question

The next step is to ensure that the right resources are ready at a moment's notice. Mistakenly, this is all too often taken as meaning merely having the right equipment available. Important though that is, it is essential to keep asking the question: what if? What if, for example, the site's firefighting water supply is damaged by an initial explosion? What if, as frequently happens, the fixed fire fighting equipment is destroyed in the blast? On a high-risk site, what if the stock of foam concentrate is rendered inaccessible or is inadequate to fight the fire?

Answering these questions will boost responders' confi-

dence in the reliability of the systems and their ability to safely tackle the emergency. It is though, of course, essential for staff to be trained to the highest proficiency in firefighting.

rapid response” fire safety measures, when a fire does occur it can quickly escalate into a major, news-grabbing, life and asset-threatening conflagration.

A fire in the older style of factory can also easily spread to adjoining premises, due to the poorer fire performance of the materials used for its construction or the close proximity of neighbouring buildings. So, there is a strong case for co-operating with the management of nearby industrial units to exchange information on fire safety precautions, potential fire risks, preventative measures and fire risk assessments. Adopting an integrated and co-ordinated approach with neighbouring sites, and sharing that information with the local emergency services may well pay huge dividends should the worst ever happen.

Specialist risks need specialist assessment

So, it is essential that whoever is responsible for undertaking the fire risk assessment has a realistic understanding of the special risks associated with industrial buildings in general and of the specific material, production and process risks and challenges of the particular site. Clearly, this is not a task to be undertaken lightly. Such risk assessments must be carried out and regularly updated by competent specialists who can demonstrate experience in these often volatile and special high-hazard environments.

Risk assessments for any high-risk site – particularly if they contain toxic, highly flammable or explosive substances, such as refineries and chemical plants – should not be limited to what might be described as “internal” fire safety threats and challenges. The responsible assessor needs to take into account what is going on beyond the site's perimeter fence: what spill-over risks do neighbouring properties and their processes pose; should neighbours' emergency preparedness plans be integrated with the site under review; what facilities exist that can be shared, and can they be relied upon around the clock? The assessor will also have to take into account the resources of the local emergency services. What specialist firefighting equipment does it have, and how readily available is it?

Train for peak performance

The skills required by site personnel will obviously depend on whether they are responsible for tackling incidents, or whether, as is increasingly the case, the task is outsourced to a specialist emergency response organisation such as the Sembcorp Protection Group. Site incident controllers and operational personnel have to be trained to take control at the scene of an incident; emergency control centre staff have to be trained and ready to direct operations; fire wardens and appropriate staff at all levels need to be competent in safe fire fighting techniques and the correct use of breathing equipment.

Test, test, and re-test

On-site practice, together with full-scale exercising and testing of every part of the emergency arrangements are equally important. And this needs to be conducted in as close to a real-life or worse-case scenario as possible.

This is most certainly not a time for a “tick box” exercise. While most industrial fires seem to occur in the middle of the night or at the weekend, the majority of companies that conduct emergency response exercises opt to carry them out mid-day, mid-week, often with plenty of warning that enables “urgent” off-site meetings to suddenly materialise. If the professional assessment suggests that the time of greatest risk is when a tanker load of highly inflammable chemicals is delivered at 3am, then that is the time to spring an exercise.

Of course, testing does needs to embrace equipment and the infrastructure too. For example, it is no good solely verifying that hydrants are in place. A fire main flow test should be carried out to a recognised standard, such as NFPA (National Fire Protection Association) 291, with multiple hydrant outlets being flowed simultaneously to measure the fire main pressure drop and establish what residual pressure is available to ensure that hydrant flow values are sufficient to cover the risk. The reality is that you may only ever have one fire, but it may also be the last, so leave nothing to chance – the stakes are too high.

IFP

Focus on Prevention...
Secure Your Business Future



Would you know what to do if this happened? **NO?**



Talk to the people who do
We practice what we teach



**Vital partners.
Essential solutions.**

Contact: Tel: +44 (0)1642 212904 protection@sembcorp.com www.sembprotection.co.uk

FIRE RAY®

Optical Beam Smoke Detectors



FIRE RAY® 5000



FIRE RAY® 50R/100R



FIRE RAY® 2000



FIRE RAY® 2000 EXD

- Low cost protection of large areas
- Easy Installation and low maintenance
- Worldwide approvals
- Over 600,000 installations worldwide
- Variety of models for all applications

A range of accessories are available:-



Universal Bracket
for the F5000



Reflective Beam Prism Plate
(on a Universal Bracket)



Range of Prism
Installation Accessories

FIRE RAY® - The leading light in smoke detectors

The Sage, Gateshead protected by FIRE RAY®



**FIRE
FIGHTING
ENTERPRISES**

9 Hunting Gate, Hitchin
Hertfordshire SG4 0TJ

T +44 (0) 1462 444740

F +44 (0) 1462 444789

E sales@ffeuk.com

W www.ffeuk.com

Foam Concentrates and Foam Systems for all applications





Storage Tank Fire Protection – Leave Nothing To Chance

By Thierry Moinet

EMEA Business
Development Manager
Foam & Hardware,
Tyco Fire Suppression &
Building Products

There is no disputing that fire safety is a major concern throughout the petrochemicals industry. However, no matter how much effort goes into preventing storage tank fires, they do occur and, when they do, it is best if nothing has been left to chance. Thierry Moinet, EMEA Business Development Manager Foam & Hardware at Tyco Fire Suppression & Building Products, explains.

If a storage tank fire breaks out, the site operator really has a choice; he can adopt a controlled burn strategy, or the blaze can be tackled.

In reality though, the controlled burn approach is an option only when: firewater run-off would cause significant pollution to sensitive environmental receptors, such as surface and groundwater extraction areas; the site is remote from population centres or a controlled burn is the best solution for air quality; when the site is not capable of containing the required quantities of firefighting water and foam; or when there is a significant risk to firefighter safety. It is certainly not an option when: smoke plumes could be a risk to public health, or large areas may require

evacuation; there is a significant risk of the fire escalating; or when the burn-out strategy may require major transport routes to be closed, with its own attendant risks.

In most cases, of course, allowing a storage tank fire to burn out is simply unacceptable on environmental pollution grounds. When the strategy is adopted, it is often not so much a pre-determined management decision; invariably, it is the result of not having the essential firefighting measures in place and there being no other choice. Indeed, it could be argued that some storage tank fires have been a combination of both strategies. Take, for example, the Buncefield storage tank fire in the UK. While it was eventually



extinguished, it undoubtedly burnt for longer than it would have had effective firefighting measures and safety protocols either been in place or properly implemented.

Interestingly, the final report of the Buncefield Standards Task Group entitled *Safety and Environmental Standards for Fuel Storage Sites*, contains advice that all of us with a part to play in the petrochemicals fire safety should heed. This includes determining the amount of foam concentrate and water that will be necessary to fight the worst-case scenario – and the key term here is “worst-case” – which should surely mean a conflagration that engulfs the entire site. Interestingly, the report also stresses the importance of assessing whether the necessary foam stocks are available on site and, if not, how quickly these stocks can be brought to the site and by whom; in particular, what arrangements have been made with foam manufacturers and/or neighbouring sites.

At Buncefield, the foam stocks on site were wholly inadequate, and it was only through the herculean efforts of organisations such as JOIFF (Joint Oil & Industry Fire Forum) and its member

companies that the essential foam concentrates and hardware was hastily brought to bear. In response Tyco, for example, implemented a policy of strategically locating stocks of foam concentrate that are sufficient to meet any eventuality; ensure fast response, continuity of supply, technical support, engineering know-how, manufacturing resources and industry expertise. The siting of these stocks is under constant review and they are relocated as and when it is necessary to reflect local supply and availability conditions, and customers’ updated risk assessments and contingency plans for each site.

Foam stocks & fast response

The effectiveness of this solution to ensuring that, as the Buncefield report puts it: “...the necessary foam stocks are available on site” by one means or another is illustrated by the events surrounding the recent storage tank fire at the Harouge Oil Operation petrochemical and refining complex at the Ras Lanuf Terminal in Libya.

The Harouge Oil Operation is a joint venture between the National Oil Corporation of Libya (NOC) and Petro-Canada, Canada’s fourth largest



oil producer and refiner. In August of this year, during routine maintenance, a fire broke out in a 450,000 barrel oil-storage tank; one of 13 oil storage tanks on the site with a total capacity of 6.5 million barrels.

To ensure that an adequate stock of foam concentrate was available on site to meet any eventuality that might develop, Calgary-based Petro-Canada immediately sought help from OSRL (Oil Spill Response Limited) in Southampton. With a brief to source 200,000 litres of foam concentrate and arrange its urgent delivery to the Ras Lanuf Terminal, OSRL contacted every major foam supplier in the UK and mainland Europe and discovered that Tyco – thanks to its strategically located stocks – was the only one with the capability to immediately meet the demand. That same afternoon, talking to Kelvin Hardingham, European, Middle East, Africa, India and Russia Manager for Williams Fire and Hazard Control Inc®, OSRL learned that three years previously – at the request of the Harouge Oil Operation's fire chief – he had produced an outline report setting out recommendations for the site's foam stock requirement in the event of a fire.

The Williams/Tyco team put into action an emergency response package that, in addition to ensuring adequate foam stocks on the ground, resulted in considerable savings in the airfreight costs and simplified on-site logistics. This required foam concentrate to be express supplied from the Tyco emergency response stocks in Spain and the Netherlands, despite it being a national holiday period in Spain and a weekend in Libya.

The original request, channelled through OSRL, was for 200,000 litres of 3% foam concentrate. However, the Williams/Tyco solution was for an equivalent quantity – 80,000 litres – of its 1% THUNDERSTORM® ATC (Alcohol Type Concentrate) 1x3 AFFF foam concentrate that was developed jointly by ANSUL® and Williams Fire and Hazard Control. THUNDERSTORM is three times as concentrated as regular 3% foam; it uses new and proprietary technology, it is specifically designed to fight fires in oil refineries, and is for-

**When it all goes wrong
You can rely on
Dr Sthamer – Hamburg**

FOAM FIGHTS FIRE

**Proven Reliability
24/7 Emergency Supplies
From Stock**

Synthetic Foams

- Moussol APS
- Moussol FF **NEW!**
- Sthamex AFFF
- Sthamex
- Sthamex class A

Protein Foams

- Fluor-Foamousse
- Foamousse FFFP
- Foamousse OMEGA
- Foamousse

Ready To Use Foams

- Fettex
- Mousseal-C
- Mousseal-CF
- Mousseal-ATC

Training Foams

**24/7
EMERGENCY
SUPPLIES
+49 40 736 1680**

We offer a comprehensive range of high performance and environmentally friendly foams.



Dr. STHAMER HAMBURG

Head Office and Factory Hamburg
Liebigstrasse 5 · D-22113 Hamburg
Phone +49 40 736168-0
Telefax +49 40 736168-60
E-Mail: info@sthamer.com · www.sthamer.com

International Sales Contact
Mr. Jan Knappert
Phone +44 (0) 7795 101770
E-mail: jknappert@sthamer.com





mulated to ensure the fastest, most reliable and safest extinguishing of a fire.

By the end of the same day, 40,000 litres were ready for despatch from the Madrid emergency stocks and 40,000 litres from Enschede in Holland, and were air freighted the following morning on the next available flights. The original plan was to use Vatry airport in northeast France and Madrid International, however the tragic Spainair accident a few days earlier made this impossible and the Spanish load was diverted to Malaga airport. Even

The first consignment of foam was on site within just three hours of the emergency being declared by BP.

Integrated solutions

Fixed foam systems are undeniably the best method of protection for storage tanks because they do not demand the hasty marshalling of emergency equipment and manpower. Much has been written on the various techniques since SKUM™ developed the first reliable storage tank

Fixed monitors are now available with delivery capabilities that span from 1,000 litres-a-minute up to more than 20,000 litres-a-minute and have shown to be a cost effective method of protecting relatively small storage tanks and associated spill or ground fires.

so, the required amount of foam concentrate arrived in Libya within 24 hours of Williams and Tyco being alerted.

This is by no means the first time that the ready availability of strategically located emergency stocks of foam concentrate has averted a potential disaster within the petrochemicals industry. Shortly after the emergency stockholding policy had been implemented, one of BP's huge petrochemical storage tanks at the Port of Amsterdam terminal in the Netherlands threatened to erupt into flames.

fire protection solution almost 60 years ago. Today, SKUM brand systems are available for cone roof and fixed roof tanks, open-top floating roof tanks, covered floating roof tanks, and horizontal tanks.

However, storage tank fires – again, Buncefield is a typical example – invariably start with an explosion that may seriously damage the tank structure and nullify the effectiveness of foam generators used in fixed or “over-the-top” systems. This has led to the more widespread use of the less vulnerable sub-surface injection and

semi-subsurface injection systems for applications where there is sufficient water pressure available for their use.

In sub-surface systems, foam is introduced close to the bottom of a tank through a separate foam line and then floats to the surface to spread and extinguish the fire. However, this technique is not used on gasoline blends that contain alcohol or other polar solvent additives as oxygenates, as polar solvents destroy the foam, even where alcohol-resistant concentrates are used. Sub-surface injection also cannot be used on cone roof tanks with internal floaters, in accordance with NFPA (National Fire Protection Association) 11 (*Standard for Low, Medium and High-expansion Foams*). The semi-subsurface injection technique overcomes this problem. It can be used for all types of fuel and has all of the benefits of sub-surface injection. This technique uses a flexible hose that is filled with foam under pressure. When the system is activated, the hose floats from the bottom of the tank to deliver the foam to the surface.

Fixed monitors are now available with delivery capabilities that span from 1,000 litres-a-minute up to more than 20,000 litres-a-minute and have shown to be a cost effective method of protecting relatively small storage tanks and associated spill or ground fires. Also, the availability of remotely-operated monitors with electrical or hydraulic control systems and exceptional throw performance are now enabling firefighters to remain at a safe distance from the blaze (Distance is safety). This has resulted in monitors being used successfully to extinguish fires in larger diameter tanks, using high-flow devices and large diameter fire hoses.

Horizontal storage tanks have been known to rupture following an explosion, so it is vital to ensure that the bund area is adequately protected. Even for larger bund areas in major tank farms, fixed low or medium-expansion generators can be used to create an effective foam blanket, with any remaining fuel in the tank being protected using a monitor. Monitors can be used to protect the bund area, but this leads to much higher foam consumption, and the recommendation is for at least two monitors to protect larger bunds to ensure complete coverage and the effectiveness of the equipment in all wind conditions.

Turning to the Buncefield report once again, it reinforces the importance of determining the wind direction because the monitors should be placed to allow the wind to carry the foam to the fire, and changes in wind direction will have to be accommodated in the plan. The report also stresses the need to decide how many and what size monitors are necessary; an assessment that obviously needs to take into account the area at risk and the application rates required to secure and extinguish this risk.

Finally, the 118-page report has a word of caution about the need to ensure compatibility when hardware is brought from a variety of sources, which surely underpins the wisdom of sourcing the foam firefighting agent and delivery system from one supplier. This is an argument long expounded by Tyco that, in addition to THUNDERSTORM, offers an array of brand foam concentrates, SKUM brand foam delivery systems, fixed foam generators and fixed and portable monitors.

IFP

**Metron
Eledyne**



FD4e diesel controller
FM Approved, UL Listed

Diesel Engine Controllers

In a wide range of applications including Fire Pump, Industrial Pump and Gen-set.

Electric Motor Controllers

For all applications using direct on line, star delta, auto transformer and variable frequency drive starting methods. Up to 11kV.

Power Distribution Equipment

Including HV and LV panel boards, sub-distribution, switch boards, battery tripping units and packaged sub-stations.

After Sales Service

Fire Pump Standards



Metron Eledyne Ltd

18 Autumn Park, Dysart Road, Grantham
Lincs NG31 7DD, United Kingdom

t +44 (0)1476 516120

f +44 (0) 1476 516121

e info@metroneledyne.co.uk

www.metroneledyne.co.uk

ATTENTION

**FM
APPROVED**



**all 10.5m & 9.1m High Buildings
The Best Sprinkler to Install**

THE N252 EC

**Extended Coverage with No In-Rack Sprinklers
Huge Savings on Materials & Labour**

Covering Solid-Pile, Palletized and Single, Double, Multiple Row Racks for Class I-IV and Cartoned Unexpanded and Cartoned Expanded Plastics

Building Height: 9.1 m Storage Height: 7.6 m Coverage: 18 m²

K-200 ESFR	K-240 ESFR	K-360 ESFR	K-240 CMDA	Ultra K17 K-240	N252 EC K-240
9.3 m ²	9.3 m ²	9.3 m ²	9.3 m ²	9.3 m ²	10 m²
3.4 bar	2.4 bar	15 psi-UL 20 psi-FM	1.6 bar (32.6 m/min)	1.5 bar	2.1 bar
12 sprs	12 sprs	12 sprs	186 m ²	15 sprs	7 sprs or 110 m²
4550 L/min	4550 L/min	4550 L/min 5120 L/min	6600 L/min	4550 L/min	Sys. demand 3660 L/min
950 L/min HS	950 L/min HS	950 L/min HS	1900 L/min HS	1900 L/min HS	950 L/min HS

Building Height: 10.7 m Storage Height: 9.1 m Coverage: 13.5 m²

K-200 ESFR	K-240 ESFR	K-360 ESFR	N252 EC K-240
9.3 m ²	9.3 m ²	9.3 m ²	13.5 m²
5.2 bar	3.6 bar	1.4 bar-UL 1.4 bar-FM	2.8 bar psi
12 sprs	12 sprs	12 sprs	9 sprs (min. of 110 m²)
5510 L/min	5500 L/min	5120 L/min 5120 L/min	Sys. demand 5440 L/min
950 L/min HS	950 L/min HS	950 L/min HS	950 L/min HS

**PATENT
PENDING**

- Wet Pipe or Pre-action Systems (when they meet the equivalency of a wet system).
- Approved for Non-combustible Obstructed Construction.
- Refer to Reliable Bulletins 008 & 908 for more information.
- Refer to FM Global's Data Sheets 2-8N, 2-2 & 8-9 for installation and design of Control Mode Special Application (CMSA) and extended coverage sprinklers.

9108 PIN 9959670372

Reliable
TECHNOLOGY • QUALITY • SERVICE

For more information and to find your nearest location, see our website
www.reliablesprinkler.com

The Reliable Automatic Sprinkler Co., Inc.
Manufacturer & Distributor of Fire Protection Equipment



Quelling Cold Store Fires

By Marcel Ruesink

Business Development
Manager, Tyco Fire
Suppression & Building
Products

In recent years, advances in materials handling equipment has enabled cold store operators to stack goods at greater heights than was previously possible, to the point where cold store racking extending as high as 12.2 metres (40 feet) is no longer uncommon. This has had major implications for the manufacturers of sprinkler systems, as Marcel Ruesink explains.

The idea of a fire in a cold store may, at first glance, seem hard to grasp. However, while the majority of the actual produce in a cold store may represent a low fire risk, fires do occur. If the store is not suitably fire protected, a fire invariably results in the complete destruction of the facility, and there is also the very real prospect for the fire to “flash-over” to adjacent buildings. The damage also frequently goes far beyond the immediate financial loss because, if a sizable cold store is put out of action, the on-going business continuity impact on the producer-to-retailer-to-consumer distribution chain can be significant.

The design concept of a cold store is to retain a cold atmosphere throughout the building’s interior. However, this also means that the building has the potential to retain heat that, in the event of a fire, may result in temperatures four times higher than in a conventional non-atmospherically controlled building. The moisture-free dry air environment throughout the store, the extensive use of highly combustible plastic packaging and cardboard

boxes, and the widespread use of wooden and plastic pallets combine to create a high fire risk environment.

Electrical faults from conveyors, movable racking control panels or materials handling equipment, lighting or “hot-spots” caused by internal maintenance operations can further contribute to this risk. Forklift trucks, for example, are invariably recharged in the store itself, adding to the threat of fire. Indeed, although most of the information relating to cold store fires is anecdotal, the indications are that two-thirds of all cold store fires have their origin in electrical faults or during maintenance work.

So, there are four key aspects of cold store fire safety that need to be addressed. These are: to be constantly aware of the need for “good house-keeping” throughout the cold store; for the potential for fire damage to be limited through containment, separation, and the use of fire resistant materials; for efficient maintenance regimes to be implemented; and for effective fire protection to be in place throughout the store.



Selecting the right solution

When sprinkler heads are located within the produce racking system itself there is, inevitably, a potential risk of mechanical impact damage to either the sprinkler discharge head or line. This, whether caused by the materials handling equipment or the produce, leads – at best – to unnecessary discharge of the water. Another unavoidable consequence is that logistics operations come to an abrupt standstill, the day's shipping quota is threatened and staff are left standing idly around until normal operation can recommence.

The only way to overcome these challenges is to utilise ceiling-mounted fire protection.

The use of antifreeze in wet-pipe sprinkler systems is another major cause for concern, where the piping has to be filled with an antifreeze solution. Without antifreeze, wet sprinkler systems simply would fail to operate in cold stores – where the temperature ranges between 0°C and minus 27°C. However, antifreeze is a combustible liquid, which adds to the fire risk in the cold store. It is also expensive and can leak and damage stored produce.

These risks can be averted only by using a dry-pipe sprinkler system, where the system's pipework is filled with pressurised air or nitrogen. This keeps water out of the pipework system, so avoiding the need to use antifreeze. When a sprinkler fuses, the air escapes, a pre-action double interlock valve – which prevents inadvertent sprinkler activation – opens and only then allows water to enter the pipework system.

International standards

So, the most appropriate answer for cold stores, unheated warehouses and outdoor storage facilities is to opt for

dry-pipe, pre-action, ceiling-only coverage that provides fire protection for commodities that are designated Class I ("light severity"), Class II ("moderate severity") and Class III (between "moderate" and "severe severity"). Such systems are suitable where, for example, poultry products are contained in plastic trays within cardboard boxes, where the cold store ceiling height is up to 14.6 metres (48 feet). They are also suitable for food products in plastic packaging, or where children's "happy meals" contain toys or novelties, where the height is limited to 10.7 metres (35 feet),

These classifications are contained in NFPA 13:2007 (*Installation of Sprinkler Systems*), a standard for the installation of automatic sprinkler systems that bases its fire control approach on the hazards associated with specific occupancies. The standard assumes that a fire involving a particular fuel class and load will grow at a predetermined rate and intensity and will spread until it is controlled by the operation of the sprinkler system or be confined by the building itself. This is a widely accepted international standard that is supported by the leading insurance companies and fire engineering specialists.

"Surround & drown"

So, the ideal solution is one that does not call for the use of antifreeze; one that places the piping and sprinkler heads beyond the risk of any impact damage, and leaves the racking system free to deliver its design versatility.

The first such solution was introduced by Tyco Fire Suppression & Building Products and is the QUELL™ Fire Sprinkler System. It effectively combats a fire using what the company calls a "surround and drown" solution, whereby the fire is effectively overwhelmed and subdued such that the heat release from it is rapidly reduced.

Water discharge from the initially activated





five **cold** *hard facts*

ABOUT THE NEW QUELL™ AUTOMATIC FIRE PROTECTION SYSTEM

Quell systems 'surround & drown' a fire, offering significant performance advantages against traditional systems. Other benefits include;

- protection up to 14.6m height
- ceiling only coverage for lower cost
- leading fire protection for frozen products including packaging & trays
- lower installation & maintenance costs

- 1** Fires can happen in cold stores
- 2** Fires are hard to put out anytime, especially in cold stores
- 3** Quell automatic sprinkler systems put out fires in cold stores, reliably and effectively
- 4** Quell systems are designed by Tyco, market leaders in water sprinkler fire protection systems
- 5** Quell systems are third party approved and are supplied with an industry leading 10-year warranty

for more hot news about cold storage fire protection, contact us



tyco
**Fire Suppression
& Building Products**

Tyco Fire Suppression & Building Products
Unit 6, Westpoint Enterprise Park, Clarence Avenue
Trafford Park, Manchester M17 1QS
Tel +44 (0) 161 875 0402 Fax +44 (0) 161 875 0493
Email info@tyco-bspd.com www.tyco-fsdp.com
For all enquiries please quote: 1007



sprinkler is delayed for a minimum of eight seconds and a maximum of 30 seconds. This allows time for one or more other sprinklers to be thermally activated by the fire, so forming the desired “surround and drown” sprinkler operational area around the fire. This ensures that sufficient water volume and cooling is applied to knock-down the fire before it has the opportunity to spread or take hold. The system’s appeal is boosted by its appreciably lower installation and maintenance cost when compared with more traditional wet-pipe systems.

operating time of the system’s Pre-Action Valve, a diaphragm-type automatic control valve. The Electronic Accelerator uses a unique system air pressure monitoring device that continuously samples air pressure at half-second intervals. If it establishes that the air pressure has sustained a drop exceeding rate of 0.007bar per second (0.1 psi a second), and if this is confirmed by three consecutive samplings, the QRS Electronic Accelerator signals the system’s Releasing Panel, which then energises the solenoid valve on the DV-5 Pre-Action Valve,

The system, the components of which are UL (Underwriters Laboratories) and FM (Factory Mutual) approved, utilises a quick-opening device called a QRS Electronic Accelerator that reduces the operating time of the system’s Pre-Action Valve, a diaphragm-type automatic control valve.

QUELL is a fully engineered system specifically designed and manufactured to protect high-piled storage, including single, double and multiple-row rack storage, as well as palletised and solid-piled storage. It is suitable for Class III commodities at up to 12.2 metres (40 feet) storage height and up to 14.6 metres (48 feet) ceiling height, and Group A cartoned unexpanded plastic commodities stored up to 9.1 metres (30 feet) high in buildings with a ceiling height of up to 10.7 metres (35 feet).

The system, the components of which are UL (Underwriters Laboratories) and FM (Factory Mutual) approved, utilises a quick-opening device called a QRS Electronic Accelerator that reduces the

which in turn activates the sprinklers.

Moisture-free air to minus 40°C dew-point is provided to the sprinkler system by an approved dry air system. This ensures the removal of oil vapour and other contaminants, prevents downstream build-up of desiccant dust and regulates the air pressure to the sprinkler system.

The installation designer can accurately predict the time to trip the Pre-Action Valve and deliver water to any area of the cold store by using the Tyco SprinkFDT-Q™ software. This enables systems to be installed with confidence that are over NFPA (National Fire Protection Association) volume restriction and up to 15,900 litres (4,200 US gallons).

IFP

Marcel Ruesink is Business Development Manager for Tyco Fire Suppression & Building Products. More information is available by telephone on +44 (0) 161 875 0402, by fax on +44 (0) 161 875 0493, or via email at marketing@tyco-bspd.com or at www.tyco-fsbsp.com

Don't leave your safety to chance



Safety Assured

Available throughout the UK, Draeger Industrial Training Courses cover everything from the selection, use and maintenance of gas detection equipment, breathing apparatus and airlines through to confined space entry procedures. First aid and emergency response are also featured together with training on the correct use of drug and alcohol testing equipment. Each course can be customised to suit specific hazards or unusual applications. If preferred, they can also be carried out at our purpose built Training Centre using sewers, manhole covers and crawl galleries as well as simulated environmental effects. Your safety is no accident - recognise the hazard, know what to do and keep safe with Draeger. www.draeger.com

Dräger. Technology for Life®

sensitron
GAS EVOLUTION
SAFETY AND SECURITY FOR A BETTER LIFE

SMART PARK SYSTEM

EN STANDARD & ONE MAN CALIBRATION
GAS DETECTION

MULTISCAN++

SMART 3P & SMART REPLACEABLE SENSOR(S) HEAD

SMART 3P

SINGLE TECH:
CO - NO₂ - NO - HC

DUAL TECH:
CO + NO₂

SENTOX IDE

sensitron
GAS EVOLUTION
SAFETY AND SECURITY FOR A BETTER LIFE

SMART 3G & (LISA) IR

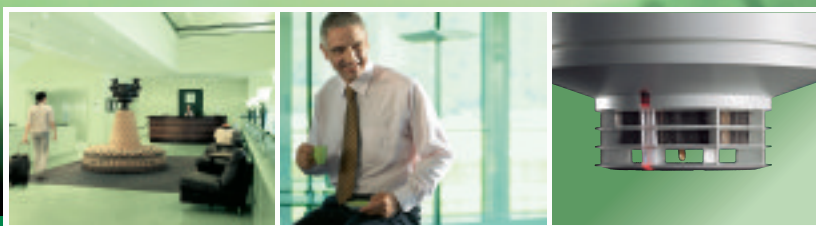
ATEX & ONE MAN CALIBRATION
GAS DETECTORS

NEW 3G & (LISA) IR DETECTORS WITH 100% APPROVED PERFORMANCE

WITH IR TECHNOLOGY
AT THE PELLISTOR PRICE



A YOUNG COMPANY WITH GREAT IDEAS
SENSITRON s.r.l. 20014 CORNAREDO (MI) - V.LE DELLA REPUBBLICA, 48 - ITALY - TEL. ++39 02.93548165 - FAX ++39 02.93549089
<http://www.sensitron.it> - e-mail: sales@sensitron.it - SOLE DISTRIBUTORS WORLDWIDE; OEM PRODUCTION AVAILABLE



The intelligent early warning system for fires.

SecuriPro® – the modular fire alarm system

Securiton AG, Alarm and Security Systems
www.securiton.com, info@securiton.com

A company of the Swiss Securitas Group



For your safety



My job isn't worth dying for. Is yours?

By William Ball

Applications and
Training Specialist,
BW Technologies by
Honeywell

For many individuals the most dangerous part of their workday is the commute to and from their place of employment. But for some, this is just one hazard faced during any given workday. People that have to enter and work in confined spaces as part of their job face deadly occupational hazards each and every day.

The National Institute for Occupational Safety and Health (NIOSH) estimate that millions of workers globally may be exposed to hazards in confined spaces, and every year a large number of those workers become workplace fatality statistics. Those killed include not only the individuals working in a confined space, but frequently those who attempt to rescue them. Confined spaces are encountered in a wide variety of industries including mining, construction, water and sewer operations, agriculture and farming, oil and gas, petrochemical, shipping and aircraft maintenance. Sewers, underground cable vaults, tanks/vessels, silos, and aircraft wings are easily identified as confined spaces. Others may not be so obvious, for example

open topped chambers, vats, manure pits, unventilated, or poorly ventilated rooms.

In July 2007, tragedy struck a dairy farm in Bridgewater, Virginia. While attempting to transfer manure from a small pit to a larger one, the pipe transferring the manure became clogged and the farmer climbed into the pit to unclog the blockage. "It was probably something he had done a hundred times," a friend said. "There was gas in there and he immediately succumbed." Emergency workers who responded to the scene speculate that a farm-hand climbed in to rescue his employer and he too collapsed. Unfortunately the farmer's wife and two daughters also perished in would be rescue attempts. Five people died that day, four from the



same family, four would be rescuers. Regardless of how obvious a confined space may or may not be, the consequences of failing to recognize the potential hazards can be fatal.

Atmospheric hazards are the number one cause of fatalities in confined spaces, however other hazards such as mechanical equipment with moving parts, engulfment and slips and falls must also be taken into consideration. Most confined space accidents can be attributed to ignorance of the hazard potential.

Since most atmospheric hazards are imperceptible to human senses it is necessary to assess the confined space atmosphere with an appropriate electronic gas detector. The least favourable conditions should be assumed to exist during every confined space entry. The possibility of explosion, poisoning and asphyxiation cannot be ignored.

Atmospheric hazards to be aware of are oxygen depletion, or enrichment, toxic/poisonous and combustible gases. These conditions may be present prior to entry, or they can arise suddenly any time during occupation of the confined space. Often work being performed in a confined space, or activity near confined spaces can contribute to changes in atmospheric conditions.

In Oakville, Ontario last June, two experienced workers were killed in a sewer where they were pulling telecommunications wiring. At point of entry, the atmosphere had been tested and declared safe, but only 6 metres into the sewer both men collapsed. The Oakville Fire Department performed a rope rescue. Once on the surface, neither victim displayed vital signs. The investigation is ongoing, but initial air quality testing revealed the oxygen levels were too low to support life. Authorities suspect that a gas from an external source displaced the normal air. The story did not say whether the workers were wearing any personal gas detectors and investigation results have not been published. This incident illustrates that atmospheric conditions in a confined space can quickly become deadly, emphasizing the need for continuous personal monitoring.

If at all possible, confined spaces should not be entered. If entry is unavoidable, then prior to any confined space entry a number of details must be considered, such as access and egress routes; restricted areas within the space; atmospheric, physical and mechanical hazards that may be present; the work to be performed; the number of people that will be involved; ventilation requirements; initial interrogation and continuous monitoring of the atmosphere; escape and rescue plans. Confined

spaces are dangerous places. Proper planning and training is integral to staying safe.

Once the atmospheric risks have been assessed, always use an appropriate gas detector to monitor the environment. A basic understanding of the gases that could be encountered and the hazards they present is essential. The majority of confined space entries involve interrogating the atmosphere for oxygen concentration, toxic contaminants and combustible gases. The most common configuration in a portable gas detector used for routine confined space entry includes oxygen, combustible (%LEL), hydrogen sulphide and carbon monoxide sensors. But not all applications are the same and the types of sensors selected should reflect the known and potential atmospheric hazards associated with the confined space. For broad range detection of toxic contaminants add a photoionization (PID) detector or a metal oxide semiconductor sensor (MOS). For the detection of carbon dioxide or combustible gases in anaerobic environments add an appropriate non-dispersive infrared sensor. Many detectors available today offer a wide selection of sensor possibilities to provide additional worker protection. Since confined space entry is the largest single market for portable gas detectors, gas detection manufacturers put huge emphasis on developing products for this application and there are various options available for consideration when selecting a monitor to suit your needs.

How to obtain a sample from the confined space atmosphere to determine whether or not it is safe to enter is a key consideration. All gases have a vapour density and in comparison to normal air, some gases are heavier than air, some are lighter and some have a comparable density. Based on vapour density, gases in a confined space will stratify so obtaining a representative sample at various levels prior to entry is important. For example, the combustible gas methane is lighter than air and tends to collect in pockets at the top of a space. Oxygen of course is a component of air and can be found at all levels. Carbon monoxide is relatively close to the density of air and can also be encountered at all levels. Hydrogen sulphide is heavier than air and tends to collect at the bottom. Sampling at the ceiling, mid-height and bottom of a confined space must be done before an "all clear" for entry can be declared.

Obtaining a representative air sample from a confined space can be achieved by different methods. The most primitive method still in use is actually lowering a portable detector into the space on a rope, retrieving it and checking peak readings. But detectors can be physically damaged if they swing against walls, hit a ladder wrung or come into contact with water or muck at the bottom. Currently remote sample draw systems are more commonly used for obtaining "pick hole" samples before opening a confined space cover and for sampling the atmosphere at a specific point or level. Two types of remote sample draw systems are generally available, motorized pump and manual hand aspirated squeeze bulb. Manually aspirated squeeze bulbs with attached tubing enable the user to bring the sample to the sensors. This method can be quite arduous and it can take a large number of squeezes to properly assess the hazard. The motorized pump provides the easiest method for drawing a sample from a remote location. Motorized pumps can be integral or external to the portable safety gas detection instrument.

The sensors in a portable safety gas detector can only detect gases that actually reach the sensors. In order for an instrument to accurately determine the concentration of oxygen and other contaminant gases that may be present in a confined space, the



sample must first reach the sensors and enough time must be allowed for the sensors to fully stabilize their readings. Whatever remote sampling technique is employed be sure to follow the manufacturer's instructions. Any failure in the sample draw system such as leakage, pump failure, improper assembly or absorbance of contaminants in the system being used can lead to dangerously inaccurate readings. Since most failure modes will produce readings that are lower than actual concentration, proper testing of the sample draw system is critical.

Once a confined space has been declared safe and workers enter that space it is essential to continue monitoring the atmosphere continuously. Ideally each worker in a confined space should be outfitted with a personal multi-gas detector as part of their everyday personal protective equipment (PPE). Many gas detection manufacturers devote a significant portion of their research and development dollars to the development of smaller, less expensive personal detectors. Workers in confined spaces are often encumbered with a lot of PPE. Today there are standard 4-gas detectors available that are extremely compact and lightweight. The smaller the detector, the less likely there will be employee opposition to donning yet another piece of protective equipment. And with lower pricing in the market, it is more affordable for employers to protect employees facing atmospheric gas hazards. The ideal confined space gas detection package would include an appropriate multi-gas detector with either a built in or external motorized pump for initial interrogation and sentry monitoring, and individual small, lightweight diffusion multi-gas detectors for each employee.

The use of personal gas detectors is primarily driven by legislation and regulations. Many countries have regulations demanding the use of detectors in confined space applications. Fortunately even without regulations many employers recognize that worker safety is a priority. Times have changed and workers cannot be treated as they have been in the past. In Canada the federal government introduced Bill C-45, new legislation that is part of the Criminal Code of Canada. Under the new law, individuals, and organizations can be held liable for occupational health and safety offences. Bill C-45 states:

Everyone who undertakes, or has the authority,

to direct how another person does work or performs a task is under a legal duty to take reasonable steps to prevent bodily harm to that person, or any other person, arising from that work or task.

The corporate director, chief executive officer and chief financial officer can be held accountable, and persecuted for offences. The penalty for conviction of occupational health and safety offences under the Criminal Code can be as severe as life in prison.

Currently countries such as India and China have a large need for personal gas detection products. As these emerging economies develop occupational health and safety regulations, the demand for protective equipment will continue to increase for quite some time. China has a population of 1.3 billion with approximately 700 million in the active work force. According to Chinese government estimates, approximately 200 million workers are potentially exposed to industrial workplace hazards. The Chinese government is currently developing regulations for occupational exposure limits. The potential in these large markets will continue to fuel research and development of new personal safety gas detection technologies.

In more mature safety markets the effect of increased safety awareness is providing positive results. According to the U.S. Department of Labour, industrial fatalities in 2006 were at the lowest rate since the fatality census began in 1992. In 1992 the number of fatal work injuries per 100,000 workers was 5.2; in 2006 the figure is down to 3.9. In Britain the same trend in workplace fatalities is evident. Since the introduction of the Health and Safety at Work Act in 1974 work related deaths have decreased approximately 35%. In 2005/2006 the number of fatalities is at the lowest level ever recorded. Fewer fatalities are the result of increased awareness and improved safety practices. The challenge now is to maintain this downward trend.

Most confined space deaths that result from exposure to lethal atmospheric conditions could have been prevented with proper training and the implementation of safe confined space entry procedures. Ignorance and complacency are deadly ingredients when it comes to workplace safety. Be safe and be aware. Don't become an industrial fatality statistic.

IFP



By Wilf Butcher,
CEO, Association for
Specialist Fire
Protection (ASFP)

You Can't Escape Your Obligations

According to new figures from the Association of British Insurers, we are told that the cost of fire damage in the UK in 2008 rose by 16% to a record £1.3bn. Within these figures they report that the cost of fire damage to homes cost £408m, up 17% on the previous year.

On 22nd September 2008, the London Evening Standard ran a feature covering a two-year battle by residents of a luxury block of apartments in Rotherhithe, over a number of poor workmanship issues. The ensuing investigation, relating to water damage and toxic mould growth, uncovered the 'shocking discovery' that:

- 1 There was little or no fire compartmentation between floors or apartments and inadequate fire resistance to the structural steel frame and of equal seriousness.
- 2 Shafts rising from the basement car park, through all six floors, were able to vent smoke unchecked on all floors and in places, no fire dampers were incorporated in the basement air ducting system.

In other words, the lives of all the residents of this apartment complex were being put at risk.

The article concluded that many homes have build problems, but perhaps this is something special.

The Association for Specialist Fire Protection (ASFP) contracting member that undertook the remedial programme on this complex would argue that this is far from a special case and if anything, this project was merely the tip of an iceberg. In fact, the company is currently undertaking other essential remedial work, at another block of apartments in London.

Far from being an isolated incident, other ASFP contracting members regularly identify buildings with poorly installed compartmentation and fire protection measures, as misapplied by **non** third-party certificated companies.

Over the past ten years there has been an upsurge of apartment block construction all over the country and until the near collapse of the housing market earlier this year, such apartments were being snapped up 'off plan' faster than they could be built.

In this drive to meet demand, who has been responsible for ensuring the fire protection needs of a building are met? Or, when put another way, when things go badly wrong as in this case, who is to blame when they are not met?

As with most things in life the answer is never that simple. None the less, the issue must be addressed if we are to avoid the inevitable fatal consequences. To do this we must ask some very difficult questions, for example:

- Is the whole inspection process fit for purpose? Clearly in the case outlined above this would seem not to be the case.
- What is the level of specifier awareness/responsibility in relation to what is happening on a day to day basis with his/her original specification?
- To what degree is the contractor's drive for cost savings greater than his willingness to understand the dangers of his cost cutting actions (particularly in the current financial climate)?
- Dare I say it; is the fire industry itself getting its educational message across as well as it may?
- How effective is the legislative process, or is it assumed by government that the advent of the

Regulatory Reform (Fire Safety) Order and guidance given in Approved Document B is sufficient. (Remember the RRFSO does not cover apartment blocks)?

- Is the growing freedom given to fire engineered solutions (particularly with an eye on new carbon friendly modular construction) as safe as the theory would lead us to believe?
- Does the fire service have all the powers that it needs?
- Are the benefits of third-party certification of specialist installers fully recognised and respected (remember, it is not a mandatory requirement)?
- How aware is the insurance industry of the non-compliance and the insured risk?

Many of these issues are complex and I regret to state, some are seen from the perspective of a 'head in the sand' but the fact remains that they need to be addressed.

Twenty five years ago, if you had asked the man in the street where on his list of priorities he would place safety features when selecting a new car, chances are it would not have been very high. Today, it's right there at the top of his list and he demands it. In many respects buying an apartment today is not so different to buying a car all those years ago (except the cost is hundreds of times greater)! The last thing on the mind of the buyer when viewing his dream apartment is the level and quality of the passive fire protection, built in to protect him from his neighbours.

In most instances he will not even know it is there. This is one occasion, however, where 'out of sight' should never be termed as 'out of mind'. Fire safety within the structure of this type of construction must be pushed up the agenda because this is not a theoretical debate. In the last year alone there have been a number of significant fires in apartment complexes. Sixteen homes, for example, were destroyed last June following a twelve hour blaze in a block of flats in Hounslow, London.

Within the construction and maintenance processes it should be recognised that where you share a responsibility to determine the specified materials and/or appoint the installation contractor, it is also your responsibility to ensure that the contractor can prove competency for the fire protection materials utilised, or the works to be carried out. It's no longer simply a Duty of Care, or a voluntary exercise – it is a legal obligation!

If you knowingly ignore advice that leads to a failure in the fire performance of any element of installed fire protection within a building, then you are likely to be found to be just as culpable as the deficient installer.

When it comes to the issue of fire, an effective means of escape is essential. No one, however, should be able to escape from the responsibility of ensuring that the fire protection installed is fit for purpose.

PROTECTING LIFE

metacaulk®

FIRESTOP SOLUTIONS

Our products meet or exceed the
Internationally recognized standards
NFPA, ASTM and UL.



Metacaulk® products have been and
continue to be used on many major
projects world wide.



San Stefano project, Alexandria, Egypt

RectorSeal manufactures a broad and full line of Firestop products under the trade name, Metacaulk. These include sealants, putties, composite sheets, pillows, wrap strips, collars and cast-in-place devices. The UL approved firestopping products are designed specifically to fill voids in construction joints and around penetrations in fire rated walls or floors. We provide technical expertise, quality products and economical solutions to all your firestop applications.

It just can't stop talking....

NEW
FREE Video
Presentation DVD
now available

The new **7-message** Fire-Cryer® Plus from VimpeX - be seen, heard and understood!

Fire-Cryer® Voice Sounders have always been both **heard and understood**.

Now VimpeX are making another clear and **unambiguous** statement with the latest addition to the Fire-Cryer® family - the Fire-Cryer® Plus.

With bold styling, integrated synchronised LED strobe and 7 selectable messages from a **multi-lingual** library of over 300, the Fire-Cryer® Plus enables a standard fire alarm system to signal much more than just fire.

Using just 2 wires, Fire-Cryer® Plus is 100% synchronised and is the only product to offer **five fully compatible** models - **wall** or **base** mounted, **open area** and **industrial** units.



FIRE CRYER® Fire ■ Bomb Alert ■ Coded Messages ■ Terrorist Attack
Public Warning ■ System Test ■ Phased Evacuation

VIMPEX
Shaping Alarm Technology

www.vimpex.co.uk

See us at International Firex,
11-14 May, NEC Birmingham, Stand K5

Tel: +44 (0) 1702 216 999
Fax: +44 (0) 1702 216 699
E-mail: sales@vimpex.co.uk



World Leader in Signalling Products

Clifford & Snell
will exhibit at
FIREX - NEC - UK
NEPA - CHICAGO
USA

Clifford & Snell is a leading manufacturer of Audible & Visual Signalling Equipment with Products servicing International markets.

Hazardous Area - Industrial - Marine - Fire - General Signalling



ATEX

IECEx

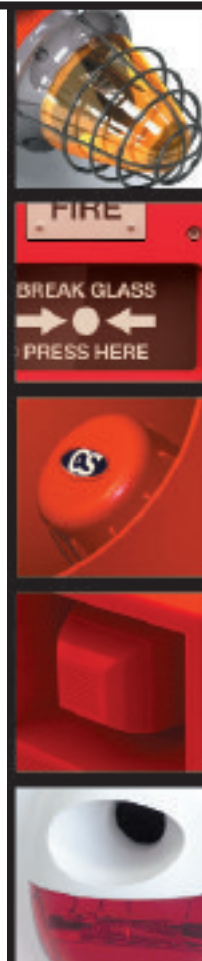
GOST-R

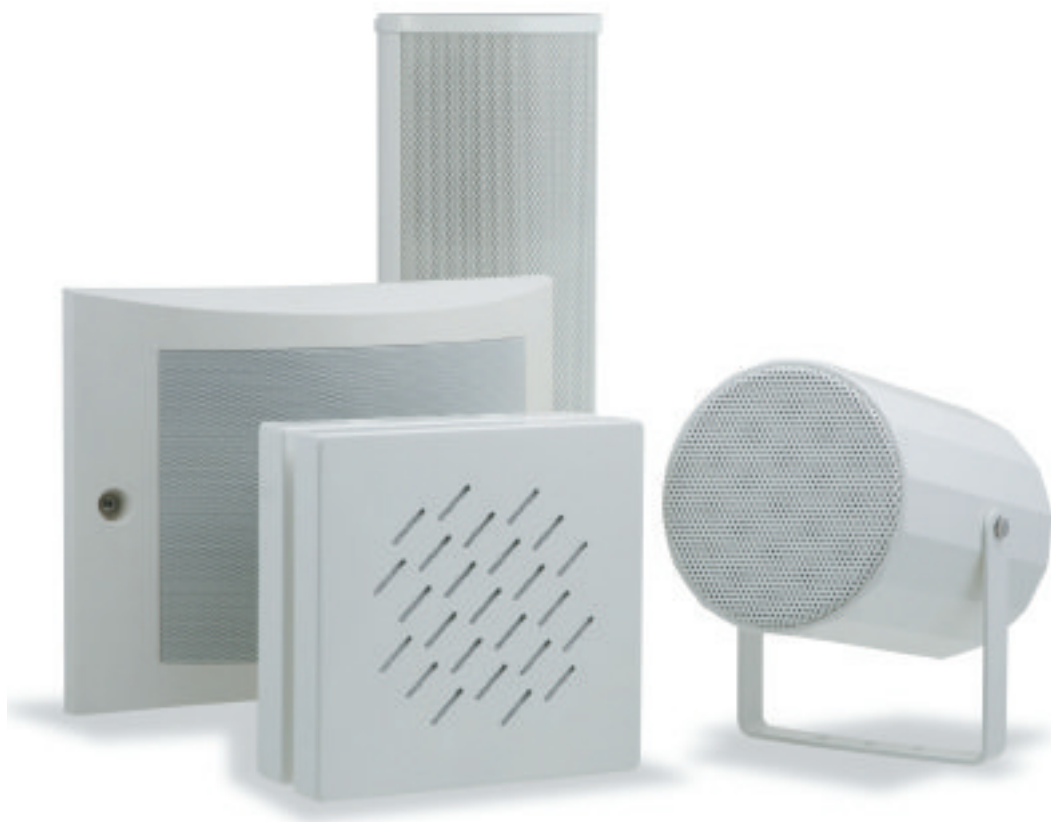


For more information about our products and services, please contact:

Clifford & Snell

Tom Cribb Road, Thamesmead, London SE28 0BH, UK. Tel: +44 208 317 1717 Fax: +44 208 317 2400
sales@cliffordandsnell.com www.cliffordandsnell.com





Thinking Inside the Box

By Bob Choppen

Product Manager,
Cooper Fulleon Ltd.

Just imagine, for a moment a life without loudspeakers, a society without a device for turning electrical signals into sound. There would be no telephones or radios, a television service limited to pictures and sub-titles. The recorded music business would not exist and Nokia would probably still be making wellington boots rather than mobile phones!

Although now a number of loudspeaker technologies exist the original and most common form is still the moving coil. Originating at the turn of the 20th century it has changed little in basic concept although naturally developments in materials, technologies, and manufacturing techniques have brought refinements in all areas of its performance. The idea is delightfully simple, a coil of wire, connected to a light diaphragm, usually cone shaped, is suspended in a magnetic field. When current flows in the coil it moves due to the interaction of the magnetic fields and being attached to the diaphragm that moves too, hence moving air and creating sound. A simple section through a speaker is shown right.

The term loudspeaker is a rather loose and can refer to either the transducer (drive unit) itself or a complete assembly comprising the drive unit(s), enclosure and any associated electronics. Although the enclosure is commonly thought of as a purely aesthetic device, it is arguably the most important

part of the loudspeaker assembly as it has a significant influence on the performance of the finished unit. Not only does the enclosure provide physical protection for the drivers, but it can also determine the frequency response, dispersion and efficiency as well as contributing to the aesthetic acceptability

PA Systems

Loudspeakers used for commercial public address (PA) systems are different to the familiar boxes used in home entertainment systems. In general a PA system is trying to convey audible and intelligible speech, perhaps with background music as a further facility, so extremes of frequency response are not required and indeed may be detrimental. Also the environments where PA is used are generally more hostile due to climate, vandalism and the need to cover much larger spaces than are presented by a cosy living room. Although based around moving coil drivers there are adaptations

The UK's Leading Independent
manufacturer of Quality Fire
and Security Products



Future proof

Since our establishment in 1993 we have become a reputable and well-renowned company, deeply-rooted within the fire safety and security sector.

Praised for our futuristic and innovative ideas, our customer base can be noted world-wide. We have been sure to focus on incorporating the latest technology and requirements of the industry when developing our products; enabling us to provide our customers with a thorough portfolio.

Why not contact us
for more information on

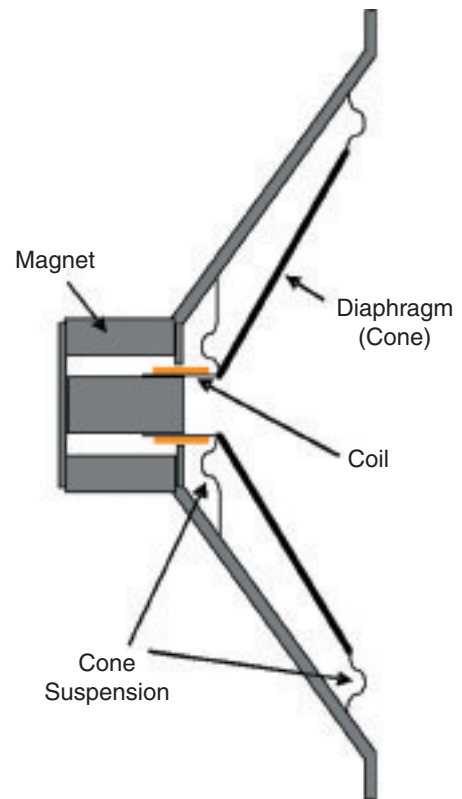
T: +44 (0)1420 592 444

F: +44 (0)1420 592 445

www.cranfordcontrols.com



CRANFORDCONTROLS™
FIRE & SECURITY



Section through moving coil loudspeaker

to suit PA use, most notably the addition of a line transformer.

The need to cover large areas with an even distribution of sound means that large numbers of loudspeakers are required, however noise levels could vary across an area so to maintain adequate levels of audibility the output from individual loudspeakers to be adjusted to suit local conditions.

To achieve this PA systems raise the voltage for the loudspeaker circuits, typically to 100V in Europe, reducing the current in the circuit and hence the voltage drop so that longer cable runs can be employed. At each loudspeaker the voltage must be reduced again, so a transformer is added, this also serves as a local volume control. By using a tapped secondary winding on the transformer the voltage fed to the speaker can be changed and the sound output adjusted. Normally the transformer tapings are arranged so that each step changes the output by around 3dB. See fig. 1.

Voice alarm

Voice Alarm (VA) is a particular form of public address system where there are added features to ensure that the integrity of the system is maintained during emergency conditions. These systems are generically called PAVA or VAPA depending on the supplier's preference.

Loudspeakers used for voice alarm are in most respects similar to those used for general PA applications, but are also required to meet the recommendations of BS 5839-8:2008 "Fire detection and fire alarm systems for buildings. Code of practice for the design, installation, commissioning and maintenance of voice alarm systems".

BS 5839-8 stresses the importance of achieving adequate intelligibility (clarity) from a PAVA and the critical role choosing the correct type of

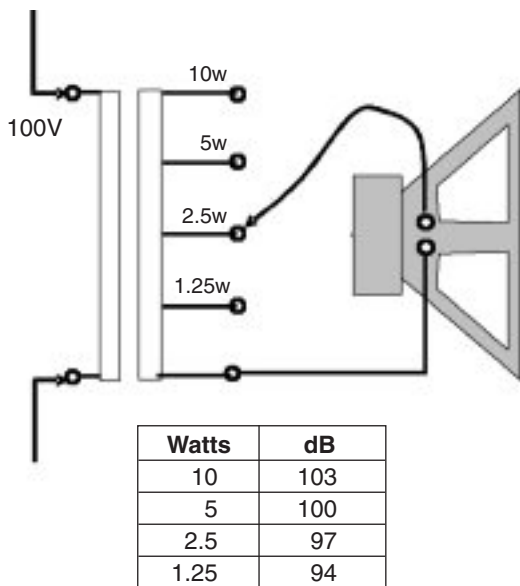


Fig. 1

loudspeaker in each area to achieve that end. In simple spaces a competent person can estimate the types, quantities and locations of loudspeakers to achieve good results, but in acoustically difficult spaces software based simulations will be required to achieve the required results. Loudspeakers should be chosen for their ability to achieve intelligible speech rather than other considerations such as size and aesthetics. Difficult spaces are characterised by any one of the following:

- Ambient noise levels above 75dB(A)
- Reverberation times greater than 1.5s
- Listener to loudspeaker distance greater than 10m.

The key differences between standard PA loudspeakers and VA loudspeakers as recommended by BS 5839-8 can be summarised as follows:

- Flush mounted ceiling loudspeakers should be fitted with rear enclosures constructed from non-combustible material with a melting point of at least 800°C to provide additional protection for cable terminations.
- Terminals should be capable of withstanding a similar temperature for a similar duration as the external interconnecting cables. Typically this will require ceramic materials. Other solutions can be used providing that under local fire conditions the integrity of the circuit is not compromised.

In addition BS EN54-24:2008 "Fire detection and fire alarm systems. Components of voice alarm systems. Loudspeakers" This is a test standard that assesses the audible and electrical performance as well as the durability of loudspeakers under various environmental conditions. As VA loudspeakers have to exist in similar conditions to fire alarm sounders the testing required by BS EN54-24 is naturally similar to BS EN54-3 for fire alarms sounders. Some of the environmental tests are onerous for certain types of PA loudspeaker so it is inevitable that the construction will change to meet these requirements. As this is a harmonised standard compliance for VA loudspeakers will become mandatory in 2011.

For loudspeaker manufacturers the cost of testing to EN54-24 will be an issue and therefore the variety and ranges of VA loudspeaker will be

NEW

INTRODUCING THE COMPACT 100dB INCREDIBLY VERSATILE ALERT POINT

It's a fire alarm that thinks
it's a panic alarm



- Suitable for small offices, portacabins, industrial and retail applications
- Stand alone, self contained alarm system
- Quick and easy to install - protecting within minutes
- Incorporates a resettable call point and has the ability to link to extra Alert Points, sounders and detectors
- Robust yet contemporary design

Reduce cost and time with the Stopper®Line



RESEt CALL POINT
EN54-11 approved
resettable - no broken glass





EXIT STOPPER®
prevents unauthorised
exits/entries



STOPPER®
prevents false
alarms



EXTINGUISHER STOPPER®
prevents extinguisher misuse



STEEL WEB STOPPER®
prevents detector misuse



8-11 June 2009
McCormick Place
Chicago

**VISIT US ON
STAND 511**



11-14 May 2009
NEC Birmingham

**VISIT US ON
STAND E50**

Safety Technology International (Europe) Ltd

Tel: +44 (0) 1527 520999 Fax: +44 (0) 1527 501999

Email: info@sti-europe.com Website: www.sti-europe.com






Patent No: 2 406 717 / 2 430 554

rationalised and choice may become limited, for a time at least. The situation with the Next Two range from Fulleon is no different, but Fulleon does have many years of testing its other fire products to similar standards and therefore already has established and proven methods for meeting the test requirements.

Currently the difference between a standard PA speaker and a BS5839-8 VA speaker is relatively small, however the material change which will be needed to also meet EN54-24 will move the specifications further apart.

Choice

As discussed earlier the choice of PA or PAVA loudspeakers to be used in an installation is critical to the effectiveness of the whole system. Planning systems for difficult spaces commonly requires the use of software tools. The characteristics of next Two loudspeakers are available as software files to aid this process.

Ceiling speakers – These are most commonly found in offices and hotels where suspended ceilings allow the loudspeaker to be flush fitted and cables run in the void behind. The size of loudspeaker used does have some bearing on the acoustic properties, but generally a 5" (130mm) or

rating so that they are suited to exposed locations such as rail or transport termini.

Projectors – Normally tube shaped with an adjustable mounting bracket, they are a version of the cabinet that allows sound to be directed in particular direction. This enables them to be more directional than a cabinet, but with higher quality than a horn, they are frequently used in transport locations like the tube and sports halls

Horns – Often seen at sporting events and manufacturing locations, where high noise levels and large areas need to be covered. The horn provides an efficient coupling to the surrounding air so that much higher levels of efficiency and higher acoustic output can be achieved. They also tend to be more directional so that it is possible to direct the sound more accurately than with other types of loudspeaker. Due to the exposed locations they also need to be weather resistant.

A limitation with horns is that the horn profile that gives the high efficiency also restricts the frequency range making it more difficult to achieve good intelligibility. The restricted frequency range also means that horns are poor for reproducing music; indeed it may damage a horn if signals with a large amount of low frequency content are broadcast through it.

Compliance with EN54-24 will undoubtedly raise the bench mark for PAVA loudspeakers, but the trickle-down of technology will also help to improve the durability and performance of the standard PA and background music versions.

6" (150mm) diameter units are favoured for general purpose use although the Next Two range includes both 4" (100mm) for compact installations and 8" (200mm) for improved frequency response

For VA use or where the ceiling is used as a fire barrier the loudspeakers will also be fitted with a rear "fire dome" which has a number of functions. It provides a secure anchor for cable glands so that if fire damages the loudspeaker the circuit will maintain continuity, secondly it also provides protection for the loudspeaker so that debris falling in the void will not cause damage and it can also provide a smoke barrier to stop smoke penetrating the void from the room below.

Cabinets – Where there is no void for to mount the loudspeaker a surface mounted cabinet is generally used. For PAVA systems these are normally metal cased to provide the secure anchorage for cable terminations and a high level of resistance to vandalism in public spaces.

A specialised version of the cabinet is the bi-directional (Bi-Di) which is used in corridors or passages. Using two drivers in opposite sides of the enclosure the sound is propagated along the walls instead of out into a room.

Column – Another form of cabinet is the column, where the drivers are stacked in a vertical line. The benefit from this arrangement is that the sound dispersion pattern is modified so that vertical spread is limited but, but enhanced horizontally. The benefit of this in high open areas is to minimise the amount of acoustic energy that can excite reverberation and reduce intelligibility. The Next Two range also includes a weatherproof

Hazardous Areas – High risk situations such as petrochemical plants require specialist loudspeakers designed to be safe for operation in the potentially explosive atmospheres that can be present. The Next Two range includes a number of IP67 explosion-proof horns designed especially to meet the requirements of hazardous locations.

The Future

The Next Two range of loudspeakers has been manufactured for many years by Fulleon's sister company; Cooper MEDC. The forthcoming mandate for compliance with EN54-24 will require some revisions to the PAVA loudspeakers and in the light of Fulleon's familiarity and expertise in designing to the EN54 range of standards it was agreed that manufacture of Next Two products should be transferred to Fulleon from May 1st. MEDC are the leading experts in hazardous area equipment and the manufacture of the explosion-proof horns and projectors will remain with them

Compliance with EN54-24 will undoubtedly raise the bench mark for PAVA loudspeakers, but the trickle-down of technology will also help to improve the durability and performance of the standard PA and background music versions.



When fire breaks out you need
a glass that keeps its cool.



Pilkington Pyrostop®
Pilkington Pyrodur®

The dangers of fire should not be treated lightly. That is why Pilkington **Pyrostop®** is designed to provide robust and reliable protection against fire with classification times from 30 minutes up to 180 minutes. Pilkington **Pyrodur®** is a reliable and effective integrity glass which provides a good level of insulation as well. People need time to escape. Buildings and their contents have to be protected against the risks of prolonged exposure. That is what Pilkington **Pyrostop®** and Pilkington **Pyrodur®** are designed to do – provide a resilient opaque barrier against fire and heat.

Pilkington Clear Fire Protection Prescott Road St Helens, Merseyside WA10 3TT
Telephone +44 (0) 1744 69 20 00 Telefax +44 (0) 1744 69 28 80
www.pilkington.com



PILKINGTON
NSG Group Flat Glass Business

Recycle Your Halon.

The future of the planet
is in your hands.

It's imperative to the health of our planet that we reduce the impact that halon has on our atmosphere. Halon Banking Systems is dedicated to the environmentally responsible recycling and redeployment of halon for essential end-users. Let us help you dispose safely of your halon, and together, we can make the world a better place.

Contact us today 001-416-458-1990.



HALON BANKING SYSTEMS

8601 73rd Avenue Suite #11, Brooklyn Park, MN 55428 USA
Tel: 001-416-458-1990 Fax: 001-763-315-0399
info@halonbankingsystems.us | www.halonbankingsystems.com



Halon Recycling

By Don Connor

GM, Halon Banking Systems

In 1992 the Montreal Protocol was implemented and called for a ban on new Halon production effective January 1st 1994. As a direct result of the ban, the business of Halon Recycling came to life.

An urgent requirement in the market developed; to have an environmentally friendly disposal method of decommissioned Halon systems as well as a continued supply of in spec Halon for critical applications still in service. The cyclical supply of recycled Halon will eliminate the requirement for new Halon production needed for critical use applications. In the early stages of Halon recycling, companies that required Halon for critical systems had concerns as to where they were going to get their future Halon requirements met. As a result of the continued demand for Halon after the new Halon Production Ban, several companies were started to try and tap into the newly created market of Halon Recycling for resale or disposal. You may ask yourself, what is Halon recycling? Halon recycling is defined as: the removal of the Halon system and subsequent removal of the Halon from its original bottle to a manageable commodity used around the world in critical applications.

There are two major types of Halon that were used in fire protection products:

Halon 1301 – (Bromotrifluoromethane) used predominantly in fixed systems

Halon 1211 – (Chlorodifluorobromomethane) used predominantly in fire extinguishers

HALON 1301 Recycling – Procedural Stages

Stage 1 – The Decommissioning of Halon 1301
Halon 1301 recycling starts the moment a Halon system is to be decommissioned. The Halon 1301

at this stage is still in the originally manufactured system cylinder and connected to the building both electrically and mechanically. At this stage the system needs to be removed by trained personnel. The system cylinder will have the actuator removed and the discharge port capped. If not done properly, the cylinder poses a considerable risk to both person and property. In one such case when a cylinder was handled improperly it resulted in a death in Canada. Once the Halon cylinder has been disconnected the cylinder should be weighed to confirm the quantity of Halon in the cylinder before it leaves the premises. This is done by taking the actual scale weight less the tare weight stamped on the cylinder. This is important in that it gives the owner a chain of custody for which he can request the removing company to sign, stating that they will safely handle and follow any and all government regulations when dealing with this product. The Halon 1301 then will be transported to a Halon Recycling Facility under its UN # 1009 and proper name Bromotrifluoromethane in compliance with all the respective country regulations.

Stage 2 – The Recovery of Halon 1301

This is the stage of the process where there is the most potential for accidental discharge and where it is contingent on the Recycler to ensure the Halon is dealt with in a proper manner. The first step is to do a preliminary check of the Halon purity. This can be done using a gas chromatograph

which is the most preferred and recommended method or by taking a small sample of Halon 1301 boiling it off and measuring the temperature. Halon 1301 systems are designed to empty their entire contents in 10 seconds or less, so it is this stage where the Halon must be removed using a controlled release. The Halon 1301 will be removed the exact same way it went into the cylinder, either through the discharge port or preferably through a service valve. In this process the Halon is run through primary filters and some of the containments are removed. The old system cylinder will be taken apart where the valve will be disassembled and the various parts sorted by type of metal. The cylinder will be perforated and sent to a scrap metal recycler.

Stage 3 – The Recycling of the Halon 1301

Now that the Halon has been removed from the original cylinder the actual recycling process can begin and the Halon can be recertified to meet the required specifications. The process begins with another round of filtering which removes water, particulate, oils and acids. Once the Halon has been properly cleaned the Halon is ready for the most difficult part of the process, Nitrogen Separation. The Halon 1301 is chilled below its boiling point so that it is in liquid form. In this state the Nitrogen separates from the Halon and is vented leaving behind only Halon 1301. This process of cooling the Halon to somewhere below -65°C

HALON 1211

Stage 1 – The Decommissioning and Recovery

Halon 1211 is commonly found in fire extinguishers making it a much easier chemical to handle than Halon 1301. The handling of Halon 1211 fire extinguishers is the same as any other extinguisher. When being removed it should have the safety pin inserted and the pin should be secured in place to prevent it from being accidentally discharged in transit. A list of cylinders should be made including serial number and number of pounds of Halon 1211 in the extinguisher. In this instance Halon 1211 extinguishers are not engineered systems so their sizes tend to vary little and you will see many common sizes in use. The Halon will be shipped to the recycling centre where each cylinder will be emptied of its contents and pulled into a vacuum. The old extinguisher will be taken apart where the valve will be disassembled and the various parts sorted by type of metal. The cylinder will be perforated and sent to a scrap metal recycler.

Stage 2 – the Recycling

Now that the Halon has been bulked up we will return the Halon 1211 to a usable commodity. The recycling of Halon 1211 is very similar to Halon 1301 except that the pressure of Halon 1211 is much lower than 1301 making it less volatile. The problem that arises with Halon 1211 is that it is

The recycling of Halon 1301 and 1211 is a very specialized industry but it is very necessary. Halon recycling will allow the Halon on the planet to be re-used and this will eliminate the need of any future production.

(depending on the machine and the process the temperature range is quite significant). The process of getting the Halon to such low temperatures can be achieved through a two stage refrigerant cooling system or by using liquid nitrogen. The process can be slow but it is necessary to meet the most common standard for Halon 1301 **ASTM Type II**.

Stage 4 – The test

The fourth and final stage of the process is to test the product in order to ensure that the Halon 1301 meets the required specification. The process involves taking a proper sample of the halon 1301. This step though it is not complicated if not done properly will undo the above work by allowing air into the sample. Once a good sample has been taken the product is sent to an approved lab for chemical analysis.

The most common standard for testing Halon 1301 is ASTM Type II which is required to meet the following purity standards: purity greater than 99.6%, Water less than 10 parts per million, non-volatile residues less than 0.01, fixed gas (nitrogen) less than 1.5%. Suspended Matter non-visible, Halogen Ion pass and Acidity <3.0 . Once the Halon meets the above requirements it is ready to ship for reuse.

much more contaminated due to the number of sources it is collected from. As a result it is necessary to use a few different types of filters in order to be able have the Halon meet the required specifications. The Halon 1211 will also be chilled below its boiling point and the excess nitrogen vented.

Stage 3 – The Test

In the testing of Halon 1211 there is not a fixed gas component so the sample taking process can be done with minimal anticipation of error.

The most common standard for testing Halon 1211 is purity greater than 99.0%, Acid Halides <3.0 , Non-volatile Residue <0.02 , Water <0.002 by percentage, non-volatile residues less than 0.02, color less than or equal to standard # 15 and suspended matter non-visible.

Summary

The recycling of Halon 1301 and 1211 is a very specialized industry but it is very necessary. Halon recycling will allow the Halon on the planet to be re-used and this will eliminate the need of any future production. So please be sure that any Halon you come across is sent through the proper channels and either recycled for reuse or destruction.

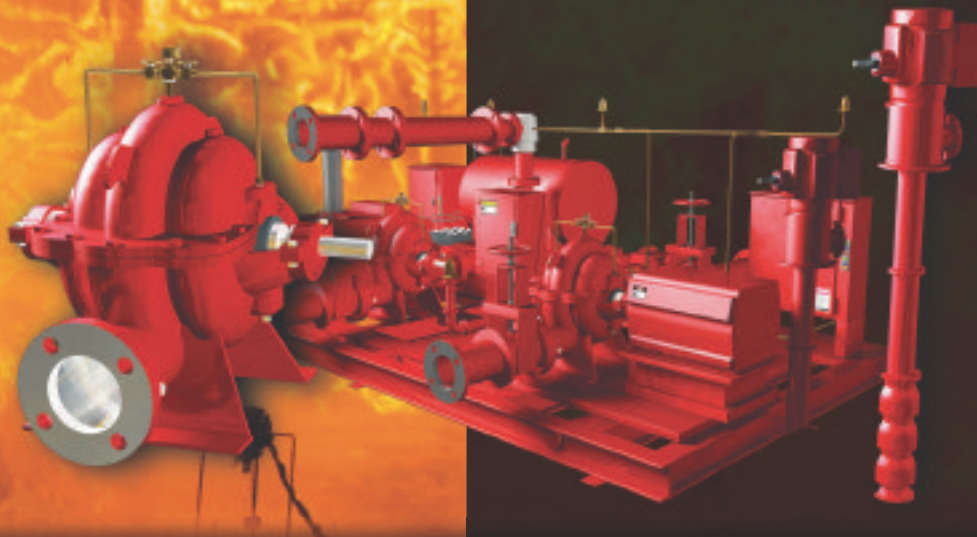
Extinguish the Fear.

It only takes a spark. In less than a minute, an uneventful day can turn into an unbelievable nightmare.

But with Sentinel™ Series fire suppression pumps on guard, you can be confident that your front line defense will respond the instant it's needed...every time. Patterson, a world-class company with ISO 9000 certification, has built a reputation over the last century for delivering quality, dependable products backed by hands-on training and personal service and support. From initial design concepts through computer-controlled machined production, Patterson engineers optimize every Sentinel product for reliable performance and durability. So whether you're protecting a small commercial application or a large industrial complex with wet pits, station Sentinel Series fire suppression pumps as your front line defenders. Extinguish the fear...with Sentinel.

SENTINEL™ SERIES FIRE SUPPRESSION PUMPS

Choose from a complete line of pumps and accessories: Horizontal Split Case, Vertical In-Line, Vertical Turbine, End Suction and Pre-Pac® custom-engineered pre-packaged systems. Contact Patterson today!



PATTERSON PUMP IRELAND LIMITED

A Subsidiary of Patterson Pump Company U.S.A.

Unit 14, Mullingar Business Park • Mullingar, Co. Westmeath, Ireland

Tel.: 353 44 934 7078 • FAX: 353 44 934 7896

E-mail: rpelot@pattersonpumps.com

www.ie.pattersonpumps.com

460383

Pumping Technology for Tomorrow's World
Patterson


© 2008 Patterson Pump Company



Member of
Hydraulic
INSTITUTE

ONLY FIRETRACE IS FIRETRACE

OTHER TUBE-BASED SYSTEMS
CLAIM TO BE LIKE FIRETRACE.
THEY ARE NOT.



**INSIST ON GENUINE
FIRETRACE SYSTEMS
FOR PROVEN FIRE
SUPPRESSION.**

- + Only FIRETRACE INTERNATIONAL manufactured Systems offer extensively tested Firetrace branded solutions with listings and approvals[†] from CE, FM, UL, ULC and more than 25 other international agencies.
- + Only FIRETRACE INTERNATIONAL has 20 years of experience with more than 65,000 systems protecting equipment worldwide
- + Only Genuine FIRETRACE SYSTEMS have the tested and proven reliability you and your customers require

Never compromise your reputation by using impostor, untested and unapproved systems – be sure you are using genuine Firetrace.

FIRETRACE®
AUTOMATIC FIRE SUPPRESSION SYSTEMS

Call +44 (0) 1293 780390 (Europe, Middle East, Africa)
or +1 480 607 1218 (US and elsewhere) or e-mail info@firetrace.com
to see why Firetrace is the right solution for your fire protection needs.

www.firetrace.com
www.firetrace.eu



Firetrace® is a registered trademark of Firetrace USA, LLC / Firetrace Ltd. All unauthorized uses of the Firetrace trademark shall be prosecuted to the fullest extent permitted by the law.

* The Firetrex, FireDeTec, and Firetec brands are the property of their respective owners, and are not the property of Firetrace.

[†] Listings and Approvals vary by system and agent.



Firetrace® Protects Delhi Airport's New Terminal's Micro- environments

By Nick Grant

Firetrace International
General Manager,
EMEA region

With India's growing economy, it is becoming ever more dependant upon mass transit systems, both for visitors to the country and for its population. Nowhere is this more so than in the Indian National Capital Territory of Delhi, one of the world's most populated metropolitan areas, by some accounts ranking fourth, ahead of Moscow, Beijing, Mexico City, New York and London.

To cope with both international and domestic travel, Indira Gandhi International Airport in Delhi recently inaugurated Asia's longest runway, measuring 4.43km. A third terminal building is currently being constructed to handle an additional 37 million passengers annually, which is due for completion by the end of 2009. It was designed by HOK – formerly Hellmuth, Obata and Kassabaum – the largest US-based architectural engineering firm, and the world's fourth-largest architectural practice, in association with Mott MacDonald, the UK-based engineering, design,

planning and project management consultancy.

Terminal Three is a two-storey building, with an arrivals area on the ground floor and a departures area on the first. When completed it will have over 160 check-in counters, 74 aerobridges, 72 immigration counters, 15 X-ray screening areas, along with duty-free shops and other passenger service facilities.

The airport is already the busiest in India in terms of number of daily flights, and the second-busiest in terms of passenger volume. In 2007, it handled 23 million passengers, and the planned



expansion program is expected to increase its capacity more than four-fold to 100 million passengers by 2030.

Electrical cabinets – mission-critical assets

In keeping with mass transit operators around the world, Delhi International Airport Limited is acutely aware of the need to ensure the safety of passengers and staff, and to safeguard the operations' mission-critical assets and facilities. So much so that it has invested in sophisticated fire detection and alarm and security monitoring equipment.

However, the airport's management was quick to recognise that conventional fire detection and alarm systems would not adequately protect vital enclosed electrical cabinets upon which the facilities' entire operational effectiveness depend. The damage or destruction of these often mission-critical electrical enclosures has the potential to go far beyond the mere the cost of their replacement; it could easily result in putting vital building management systems out of operation with a major detrimental impact on passenger safety or service levels.

It was decided that the only way to ensure that this could not occur was to provide dedicated fast-response detection, fast agent discharge, and fast and effective suppression to minimise damage to the cabinets' internal components and prevent the spread of fire from one cabinet to the next.

No matter how effective and sophisticated, the facilities' main fire detection and alarm systems simply do not respond fast enough; they do not provide protection to the micro-environments precisely where it is needed, and that is inside the cabinet where it can react immediately a fire breaks out. This is because, by the time sufficient smoke has escaped from the often-sealed electrical cabinet in sufficient concentration to activate a ceiling-mounted smoke or heat sensor or a beam detector, the interior of the cabinet is virtually certain to be engulfed in flames and extensively

damaged, if not destroyed. So, the only effective solution is to install fire detection and suppression inside the electrical cabinet itself.

However, electrical cabinets contain a host of components such as internal sealed chambers, bus bars and cable alleys, and the internal layout often comprises small sealed compartments. These are the high fire risk areas in electrical cabinets. This means that the fire detection system needs to be installed in each and every internal compartment if the fire is to be extinguished at the earliest possible stage and any damage or disruption kept to an absolute minimum.

This is why glass sprinkler bulb-type actuators that discharge only when sufficient heat has built up around the glass bulb to cause it to break are ineffective. If the glass bulb happens to be located some distance from the source of the fire, there is the very real prospect of the cabinet's contents being seriously damaged before the extinguishing agent is deployed.

Firetrace® solution

Delhi International Airport's management looked closely at all of the available options before deciding that ISO 9001-approved Firetrace International's FIRETRACE® system was the only effective and reliable solution. FIRETRACE was found to provide the essential detection and suppression characteristics that would ensure the effective protection of the cabinets, with a track record of more than 75,000 successfully completed installations around the world.

FIRETRACE is an automatic fire suppression system that provides around-the-clock protection. It is a "self-seeking" system; a stand-alone solution that is entirely self-contained and does not require an external power source.

The UL (Underwriters Laboratories) and FM (Factory Mutual) certified and CE (Conformité Européenne or European Conformity) approved system comprises an extinguishing agent cylinder that is attached to proprietary Firetrace Detection

THERE IS MORE THAN ONE WAY TO SUPPRESS A FIRE.



THE EXPERTS AT FIKE SELECT ONLY THE BEST.



ECARO-25®

Exceptional, cost-effective
clean agent fire protection.
DuPont™ FE-25™



PROINERT®

Unique inert gas valve
yields significant system
and installation savings.



DuPont™ FM-200®

Waterless clean agent fire
suppression solutions for the
modern workspace — only
from DuPont.

Fike doesn't just offer protection. We develop technologically advanced fire suppression systems that protect your bottom line, as well as your facility and assets. **ECARO-25, PROINERT, DuPont™ FM-200®** are USGBC LEED® recognized.

At Fike, we're known for:

- Innovative, reliable products
- Fast, responsive service
- Creating a partnership with our customers

Visit Fike at NFPA, Booth #947

**FIKE HAS THE MOST COST-EFFECTIVE, INNOVATIVE
FIRE SUPPRESSION SOLUTIONS AVAILABLE.**

Fike®

WWW.FIKE.COM
1-866-758-6004



Tubing via a custom-engineered valve. This small-bore polymer tubing is a linear pneumatic heat and flame detector that was specially developed to deliver the desired temperature-sensitive detection and delivery characteristics. It detects along the entire length of the tube, so the FIRETRACE tubing quickly detects a fire at its source, ruptures and automatically releases the suppression agent, extinguishing the fire precisely where it starts and before it has had time to take hold.

new Terminal Three building, but this will rise to 300 over the coming months.

The Delhi International Airport uses the Firetrace Direct System, which is the most commonly used option for protecting electrical cabinets.

This system utilises the FIRETRACE tube as both the detection device and the suppressant delivery system. When the tubing detects a fire anywhere along its length it ruptures, forming an effective spray nozzle that automatically releases the entire contents of the cylinder. However, there is also a Firetrace Indirect System that uses the FIRETRACE tube as a detection and system activation device, but not for the agent discharge. The rupturing of the tube results in a drop of pressure causing the indirect valve to activate. This diverts flow from the detection tube and the agent is discharged from the cylinder through diffuser nozzles, flooding the entire enclosure.

Negotiations for the Delhi Airport contract were overseen by Kuldeep Chauhan of Colimantor Enterprises LLP, Firetrace International's principle trading partner for India, who worked closely with SVS Buildwell, the master distributor for India. Commenting on the order, he said: "Having UL and FM approval was a major factor in FIRETRACE's favour. It underpins the quality of the system and clearly separates FIRETRACE from poor quality imitators with uncertified products."

He continued: "Offering a wide selection of suppression agents was another differentiating factor. A potential supplier that can offer only CO₂ (carbon dioxide) – which is widely available – is probably unable to secure supply agreements with extinguishing gas manufacturers that place stringent requirements on the companies they are

In addition to protection of electrical cabinets and enclosures, typical FIRETRACE applications include protecting server racks and computer rooms, control tower systems, remote air guidance systems and telecommunications centres.

The flexibility of the Firetrace Detection Tube enables it to be threaded around and throughout the cabinet's tightly-packed maze of compartments and components. It enters and leaves each compartment through the integral cable glands meaning that, in the vast majority of cases, drilling is not required, so FIRETRACE does not compromise the IP (Ingress Protection) rating of the cabinet.

Intelligent suppression

Subject to certain limits, the Firetrace Detection Tube can be installed throughout several conjoined electrical cabinets. However, the FIRETRACE installation needs to have only sufficient gas to extinguish a fire in one cabinet, so the largest individual sealed cabinet in a row is used to calculate the quantity of extinguishing gas needed for the entire run of cabinets. This means that there is sufficient suppression agent to flood the whole cabinet, but it is discharged at the single hottest point where the fire has started, preventing re-ignition and fire spread.

90 FIRETRACE systems are presently scheduled for delivery to Delhi International Airport for the

prepared to supply. They may also simply not understand the different fire classes and appreciate that CO₂ is not an appropriate suppression agent for applications." He concluded: "The current Firetrace International offering includes clean agents such as 3M™ Novec™ 1230 Fire Protection Fluid and DuPont™ FM200®, along with foam, CO₂ and dry chemical suppressants."

Other airport applications

FIRETRACE is the ideal solution for many airport fire risks. In addition to protection electrical cabinets and enclosures, typical FIRETRACE applications include protecting server racks and computer rooms, control tower systems, remote air guidance systems and telecommunications centres. Other applications include baggage handling systems, elevators, escalators and moving walkways. The system is also being widely adopted for passenger, maintenance and catering trucks and ground service vehicles, where the same FIRETRACE technology is increasingly protecting engine and power generation compartments from fire. **IFP**

Further information on FIRETRACE is available from the FIRETRACE EMEA head office in the UK on +44 (0) 1293 780390, or from Firetrace International headquarters in Scottsdale, Arizona USA on +1 480 607 1218. The company's website is at www.firetrace.com



Much more than meets the eye.

The Eusebi Group is comprised of dynamic, integrated and flexible companies with more than 30 years of experience at an international level in the design and production of fire protection systems for complex industries in the energy, oil, petrochemical, naval and military fields. The certifications that Eusebi Group has been awarded and the many different systems installed all over the world, often in critical situations, bear witness to the skills acquired by the Group and the innovative solutions it proposes. The systems manufactured by the Group are the result of the dedicated commitment of each and every member of Eusebi's staff, from the laboratory technicians to the worksite personnel, who all go the extra mile to guarantee protection its clients can count on. Thanks to its perseverance in improving performance, backed by a system of values, skills and sense of responsibility, the Eusebi Group constantly improves its quality standards. **A commitment born from a passion: your safety.**



Eusebi Group. You can rely on us.

www.eusebigroup.com

Fire Facts for

Whether conducting risk assessments or facing a live fire situation, it is vital that fire professionals are armed with accurate information about the potential hazards they are dealing with.



By Phil Heath

Technical Manager,
Kingspan Insulation
Limited

In issue 36 of International Fire Protection some interesting questions about the role played by insulation in the fire performance of buildings were posed in an article by Hans Schreuder, Managing Director of Rockwool. Here, Phil Heath of Kingspan Insulation offers his company's alternative view on the issues raised in that article. He looks at the scope of current fire legislation as it relates to insulation products, including the Regulatory Reform (Fire Safety) Order and the guidance offered to specifiers by Approved Document B, and also examines the relevance of the different tests and standards that are available.

The significant changes in fire legislation over recent years and initiatives such as Integrated Risk Management Planning (IRMP) appear to be having the desired effect by preventing fires and managing risk, as The Fire and Rescue Service National Framework document published in May 2008 reports:

*"The number of fires in England continues to fall and fire deaths are at the lowest since the 1950s."*¹

This encouraging fact is at least in part the result of the fresh focus on fire prevention driven by the Regulatory Reform (Fire Safety) Order (RRO) and the changes to the guidance documents to Part B of the Building Regulations – Approved Document B (Fire safety) 2006 Edition: Volume 1: Dwellinghouses and Volume 2: Buildings other than Dwellinghouses.

The question in this instance is what impact has this important legislation had on the construction industry and what are the subsequent implications for fire professionals?

Implications of the RRO in construction:

The RRO essentially shifts responsibility for the fire safety of non-domestic buildings onto the shoulders of the building manager – the 'responsible person'. In upholding their responsibilities this individual can call upon the expertise of other qualified parties to conduct the required fire risk assessments and identify necessary or desirable measures to prevent or reduce the risk of fire and ensure the safety of the building occupants.

However, the RRO has been grossly misinterpreted in some quarters with claims that it requires designers, specifiers and contractors to identify, address and communicate any potential fire risks in materials and design, including the use of combustible products in the construction, and that they face criminal prosecution if they do not. This is not the case.

In the first place, the only reference to construction materials in the RRO is that the Secretary of

Insulation



State may impose requirements

*"(d) as to the internal construction of the premises and the materials used in that construction"*²

Secondly, the RRO is far more concerned with measures such as fire escape routes and firefighting equipment, and only requires that significant residual risks to life are recorded. It certainly does not require that every use of a combustible material is reported.

Approved Document B2 (ADB2), on the other hand, does refer to the RRO in relation to construction, stating:

*"Although these requirements are applicable to premises whilst in operation, it would be useful for the designers of a building to carry out a preliminary fire risk assessment as part of the design process" and that such an assessment "can assist the fire safety enforcing authority in providing advice...as to what, if any, additional provisions may be necessary when the building is first occupied."*³

Those involved in the actual construction of a building can therefore provide valuable information about the design so that informed recommendations can be made about issues such as the provision of sprinklers or the siting of firefighting equipment, but they are not required to do so by the RRO.

Good building design has a role to play in managing fire risk, and whilst we have seen that the RRO has no direct input into this, ADB2 does, so we shall next examine the implications of one of the recent changes to this important guidance document.

Compartmentation

Using compartmentation is an effective way of limiting fire spread, and is therefore a key consideration in building fire safety. ADB2 encourages the use of compartmentation as a fire safety measure in the design of non-domestic buildings. Attention has been drawn to the requirements at the points in a building where a compartment wall meets the roof, and the demands that are placed on insulation materials in these situations.

Section 8.29 of ADB2 states: *"... a zone of the roof 1500 mm wide on either side of the wall should have a covering of designation AA, AB or AC ... on a substrate or deck of a material of limited combustibility"*.

The key here is that the requirements relate to the substrate or deck and to the covering, rather than the insulation material that may be used between the deck and the covering.

In a steel flat roof deck with a single ply waterproofing membrane, the membrane is classed as the roof "covering" and needs to achieve the designation AA, AB or AC. The letters give an indication of fire performance, the first letter indicating the time to penetration and the second letter as a measure of the spread of flame, with an AA designation being the best.

In the same construction, the steel flat roof deck is the "deck or substrate" and steel meets the criteria of limited combustibility. Table A6 in ADB2 defines *"Totally inorganic materials such as concrete, fired clay, ceramics, metals, plaster and masonry containing not more than 1% by weight or volume of organic material"* as non combustible.

Further guidance on compliance with the requirements of Approved Document B, appears on a new Government FAQ site and also states:

"... an alternative approach might be to use a panel system which has been shown in a large scale test to resist internal and external surface flaming and concealed burning"

This Government advice clearly supports the view that insulation materials without a non-combustible rating can be used without any need for cost adding measures such as parapet walls or fire resisting ceilings. The FAQ site can be found at: <http://www.planningportal.gov.uk/england/professionals/en/1115315762605.html>

Testing

The next major issue is having an understanding of the different tests and standards, and whether or not they have any value in ascertaining the likely fire performance of a building.

Ad hoc tests and demonstrations carried out by companies on their own behalf should always be treated with care, and even claims based on 'official' test standards need to be regarded with caution if those tests are not relevant to the products in question.

International Standard ISO 9705:1993 (E)

For example, the ISO 9705:1993 (E) room corner test entitled "Fire tests – Full-scale room test for

Rigid phenolic insulated plasterboard forms a crucial initial barrier that can make all the difference in a fire situation



surface products" was, as its title suggests, developed to test wall and ceiling surface lining products and not construction products generally. It states this specifically in the scope (section 1 of the standard), yet it has lately been used in some widely publicised fire test videos with insulation which is not and never was intended for use as surface or lining products exposed to the fire on the inside of the test cell.

Most insulation products are installed behind a fire rated lining such as plasterboard, block or brick, and the test is therefore inappropriate to apply to insulation products unless they are tested as part of a complete assembly including the actual lining product. ISO 9705 is inappropriate as a demonstration fire test for such insulation products, and its use is deliberately misleading as it is likely to raise fears which are not founded in fact.

A number of public product demonstrations have also been carried out that reference ISO 9705. Again the insulation products being tested are exposed to the fire on the inside of the demonstration test cell. Although ISO 9705 is referenced, the demonstration tests have not been carried out under the correct controlled conditions e.g. the size of the test rig used in the demonstrations is significantly smaller than that used by the ISO 9705 test. These manipulations can unduly affect the results of the demonstrations and renders them completely invalid even for products that are normally surface mounted in use.

Tests for Reaction or Resistance

In trying to determine how a product will perform in a real fire scenario it is important to understand the difference between reaction to fire and fire resistance:

- **reaction to fire** deals with how a specific material reacts when exposed to heat;
- **fire resistance** is concerned with the ability of a structural element, such as a wall, to sustain the performance of its structural duty when exposed to heat.

'Reaction to fire' is represented by the 'Class O' type rating system in Approved Document B to the Building Regulations in England & Wales or the risk categories shown in the Technical Handbooks in Scotland. These ratings can be achieved by

reference to the relatively new Euroclass system for 'reaction to fire' or by the tried and tested BS 476 Parts 6 and 7. At present in the UK you can still choose whether to classify your products' fire performance under the Euroclass system or the British system.

Euroclass system

The Euroclass rating system for 'reaction to fire' is based on the Single Burning Item (SBI) Test. It is not at all useful when applied to 'naked' insulation products as the system was developed for wall and ceiling lining applications and, as discussed above, insulation is rarely used as such.

Applying the Euroclass rating system to insulation products 'in application' does offer more representative results. But when tested like this, insulation products have little or no impact on the final rating because, as is the case in a real fire, they are isolated from the fire itself by the lining of the room.

It is worth noting that many products that score well for 'reaction to fire' under testing such as the Euroclass system may offer little or no fire resistance. On the other hand, some which appear to have a poor 'reaction to fire' as a naked product can offer a significant contribution to a building's ability to resist fire.

BS 476: Parts 21 and 22

The British Standard tests BS 476: Parts 21 and 22 are suitable for assessing fire resistance. For example, in a test carried out on a rigid polyisocyanurate insulation product in a standard timber frame wall to British Standard BS 476: Part 21: 1987, the plasterboard facing of the wall burnt away exposing the insulation, but the polyisocyanurate core provided the critical fire resistance for the test to proceed. After 36 minutes the test was stopped and the core was far from destroyed. Similar tests using rigid phenolic insulation in a timber frame wall yielded 51 minutes of insulation and integrity.

In Conclusion

Fire professionals should be aware that the presence of commonly used materials without a non-combustible rating in the building envelope does not automatically represent a risk, neither does the use of non-combustible insulation necessarily guarantee a safer construction since although it may not burn it may also not contribute to the fire resistance and structural stability of a building. Suitable testing can provide a clearer picture of what to expect, but it is important to be able to differentiate between what the various standards actually tell us. At the end of the day, elements such as insulation should never be taken in isolation but in the context of the overall construction.

IFP

References

- 1 Fire and Rescue Service National Framework 2008-11. May 2008. Department for Communities and Local Government
- 2 The Regulatory Reform (Fire Safety) Order 2005, p 17.
- 3 The Building Regulations 2000, Fire Safety, Approved Document B Volume 2 – Buildings other than dwelling houses. 2006 edition. p6
- 4 <http://www.redbooklive.com/page.jsp?id=226> 27th March 2009

For further information please contact:
UK
 Tel: +44 (0) 870 733 8333
 Fax: +44 (0) 1544 387 299
 Email: literature.uk@insulation.kingspan.com
 Website: www.insulation.kingspan.com

FM-200®

WATER MIST

CO2

FOAM

ALARM/DETECTION

AIR SAMPLING



JANUS
FIRE SYSTEMS™

EXPERIENCED
MANUFACTURER.
CUSTOMER FOCUSED.

YOUR GATEWAY TO A NEW KIND OF SERVICE

+1.219.663.1600

www.janusfiresystems.com

1102 Rupcich Drive

Crown Point, IN 46307 U.S.A.

FM-200® is a registered trademark of E.I. du Pont de Nemours and Company.

Visit us at
**FIREX
D30**

APPROVED



FIRE ALARM CONTROL PANELS
CERTIFIED TO EN54-2/4
LVD, EMC, CPD COMPLIANT



AUTOMATIC EXTINGUISHER PANELS
CERTIFIED TO EN12094-1 & EN54-2/4
LVD, EMC, CPD COMPLIANT



12V & 24V POWER SUPPLIES
CERTIFIED TO EN54-4
LVD, EMC, CPD COMPLIANT

C-TEC is the only UK fire panel manufacturer with third-party product certifications and factory process approvals from the LPCB, BSI and VdS.

Currently trading in over 60 countries worldwide, our commitment to quality is underlined by our ISO 9001 accreditation (held since 1994) and our corporate membership of the Fire Industry Association (FIA).

When it comes to high-quality standards-compliant life safety equipment, you're safe with C-TEC.

To find out more call our Sales Desk on +44 (0) 1942 322744
or visit us at this year's International Firex Exhibition



+44 (0)1942 322744



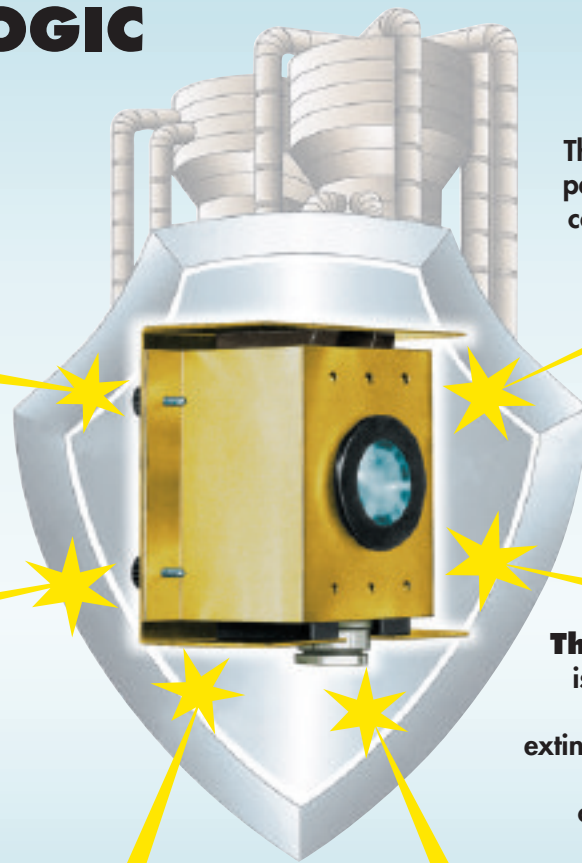
www.c-tec.co.uk

You're safe with



CONTROL LOGIC Spark detector

designed for
dust collection
systems
to protect
storage silos
from the risk
of fire.



**Sparks fly
at high speed.**

They travel at a hundred kilometres per hour along the ducts of the dust collection system and reach the silo in less than three seconds

The CONTROL LOGIC SPARK DETECTOR

is faster than
the sparks themselves.
It detects them with its highly
sensitive infrared sensor,
intercepts and extinguishes
them in a flash.
It needs no periodic inspection.

The **CONTROL LOGIC system**
is designed for "total supervision".
It verifies that sparks have been
extinguished, gives prompt warning of
any malfunction and, if needed,
cuts off the duct and stops the fan.

ISO 9001

20137 Milano - Via Ennio, 25 - Italy
Tel.: + 39 02 5410 0818 - Fax + 39 02 5410 0764
E-mail: controllogic@controllogic.it - Web: www.controllogic.it



CONTROL LOGIC s.r.l.



BETTER TO KNOW IT BEFORE

Eye is faster than nose.

In the event of live fire
the IR FLAME DETECTOR
responds immediately

CONTROL LOGIC IR FLAME DETECTOR

the fastest and most effective fire alarm device
for industrial applications

IR FLAME DETECTOR
RIV-601/FA
EXPLOSIONPROOF
ENCLOSURE

For industrial applications indoors
or outdoors where is a risk of explosion
and where the explosionproof
protection is required.
One detector can monitor a vast area
and responds immediately
to the fire, yet of small size.



IR FLAME DETECTOR
RIV-601/F
WATERTIGHT
IP 65 ENCLOSURE

For industrial applications indoors
or outdoors where fire can spread
out rapidly due to the presence of
highly inflammable materials,
and where vast premises need an optical
detector with a great sensitivity
and large field of view.

Also for
RS485 two-wire serial line

ISO 9001

20137 Milano - Via Ennio, 25 - Italy
Tel.: + 39 02 5410 0818 - Fax + 39 02 5410 0764
E-mail: controllogic@controllogic.it - Web: www.controllogic.it



CONTROL LOGIC s.r.l.



By Andy Kay

Chairman, Association
for Specialist Fire
Protection (ASFP)

Compartmentation – so Important in Saving Lives

There is a worrying statistic that 44% of fire related deaths happen to people who were outside the room of origin of the blaze; worrying because these deaths are preventable.

In April 1996, a fire broke out in Düsseldorf airport. A welder had set fire to some polystyrene insulation and the resultant blaze led to seventeen deaths. Eight people were killed in a VIP lounge, several hundred metres from the seat of the fire. Smoke and noxious gasses had spread uncontrollably through the ventilation ducts and caught the occupants of the lounge unawares. Had the compartmentation within the building been adequate, these deaths would not have occurred.

In another tragic case, in January 2004, a faulty fuse led to the deaths of fourteen residents in the Rosepark Care Home in Glasgow. The fire remained in a fairly contained area, but the build up of pressure led to thick smoke being forced through every part of the home and the elderly patients all died of smoke inhalation. Chief Superintendent Tom Buchan said at the time, "It was not what you would call a significant fire, in the sense that the premises were destroyed. There is, in fact, very little damage." Again, these deaths were preventable.

There are 5 main strands to an effective fire strategy within a building:

- Prevention – this speaks for itself. Prevent fires from breaking out and everyone is happy. However, the reality is that fires are inevitable and with arson on the increase, the best house-keeping and preventative measures have only a minimal effect on fire statistics
- Detection – this is provided by smoke and fire alarms
- Suppression – suppression systems include mechanically activated systems (referred to as active) such as sprinklers and gas suppression systems, as well as fire extinguishers and blankets

- Evacuation – the Building Regulations are designed to save lives and ensure the safe evacuation of a building
- Containment – keeping the fire, smoke and noxious gasses to a restricted area; achieved by dividing a building up into fire rated compartments. This not only aids evacuation and thus saves lives, but it is also the primary strategy for property protection. Insured losses from fires in Great Britain annually break the £1 billion mark, but combined with uninsured losses the true figure is somewhere between £6 and £7 billion.

When a building is designed there are regulations governing the size of compartments within the building in order to reduce the risk of fire spread. The walls, floors and ceilings of these compartments will have a fire and insulation rating, generally ranging from ½ hour to a maximum of 4 hours – depending on the usage of the premises, the siting of the compartment or the presence of sprinkler systems. The idea is that in the event of fire the flame, heat and smoke produced will stay within the compartment, thus reducing the risk to both lives and property. This process is called compartmentation.

The construction of the walls, floors and ceilings will be carried out in accordance with these design criteria, but in order for any compartment to be usable by its occupants, breaches have to be made for such elements as doors, mechanical and electrical services and expansion joints. It's these breaches that need to be addressed through the installation of built in (passive) fire measures. The most commonly recognised built-in fire protection is the fire door and most of us now know that propping them open, usually with a handily placed fire extinguisher, is not best

The construction of the walls, floors and ceilings will be carried out in accordance with these design criteria, but in order for any compartment to be usable by its occupants, breaches have to be made for such elements as doors, mechanical and electrical services and expansion joints.

practice! However, a compartment wall has to run from floor slab to ceiling soffit. The fire door may well be sat on top of a computer deck/raised access floor with a suspended ceiling above. Take a moment to push up some ceiling tiles above a fire door and you will often be faced with multiple services passing through the wall. If these services have not been adequately protected then the money spent on the fire door has been wasted. Fire is not discriminatory. It will find the least line of resistance to pass from one compartment to another.

The types of products used to protect these services are generally referred to as fire-stopping. There are whole sections of Approved Document B of the England and Wales Building Regulations devoted to compartmentation. Similar guidance is given in the Scottish Technical Manuals, Part E of the Northern Ireland Regulations and Technical Guidance Document B in Eire. The most pertinent sections that apply to fire-stopping are:

10.2: Reinstatement of compartments – *“If a fire separating element is to be effective, then every joint, or imperfection of fit, or opening to allow services to pass through the element, should be adequately protected by sealing or fire-stopping so that the fire resistance of the element is not impaired”*

There are many proprietary fire-stop products available that are designed to seal around compartment breaches and fill construction joints, thereby reinstating the integrity of the wall, floor or ceiling to its original design criteria. As opposed to the “active” systems such as sprinklers, firestopping products are generally referred to in the industry as “passive” or “built in” fire protection. Active and passive systems are not mutually exclusive, but should be used together to provide a holistic fire strategy for a building.

Passive products need to not only provide a flame, heat and smoke barrier, but also need to accommodate the possibility of services burning away and leaving holes in the compartment. A good example is a sanitary soil pipe passing through a wall. These are generally 110mm plastic pipes. Just sealing around these pipes will be inadequate because the fire will cause the pipe to melt and burn away very quickly, leaving a large hole for the fire and smoke to pass through. One solution to this is a pipe collar that is wrapped around the pipe and fixed to the wall. Inside the pipe collar is a material that, when exposed to heat will expand and exert pressure on the plastic as it softens, eventually crushing the pipe before the flame and smoke can pass through the wall. These types of expanding materials are called intumescent products. The most common active

There are many proprietary fire-stop products available that are designed to seal around compartment breaches and fill construction joints, thereby reinstating the integrity of the wall, floor or ceiling to its original design criteria. As opposed to the “active” systems such as sprinklers, firestopping products are generally referred to in the industry as “passive” or “built in” fire protection.

10.17: Fire-stopping – *“In addition to any other provisions in this document for fire-stopping:*

- a. *joints between fire separating elements should be fire-stopped; and*
- b. *all openings for pipes, ducts, conduits or cables to pass through any part of a fire-separating element should be:*
 - i. *kept as few in number as possible, and*
 - ii. *kept as small as practicable, and*
 - iii. *fire-stopped (which in the case of a pipe or duct, should allow for thermal movement).”*

8.27: Head of Wall – *Compartment walls should be able to accommodate the predicted deflection of the floor above by*

- a. *having a suitable head detail between the wall and the floor, that can deform but maintain integrity when exposed to fire.*

ingredient is graphite, which is the fastest reacting intumescent currently available.

The term Firestop intimates that the products are designed to stop the spread of fire. Although this is true, it is also important to remember that they serve other functions as well. If you want to block an opening to stop a flame going through, the easiest way would be to bolt a steel plate over the hole. However, although this would stop the flame the heat build up could lead to materials combusting on the non fire side of the wall or floor and the fire would spread outside of the compartment. Therefore, the Building Regulations call for products to be tested for their thermal insulation properties as well i.e. their ability to withstand the passage of heat. In all cases, the thermal requirement will be equivalent to fire rating. If a product has achieved 90 minutes

fire resistance but only 60 minutes thermal resistance, it should only be used where there is a 60 minute requirement.

In many applications the firestop products have to accommodate movement of the services or joints in every day usage. Sealants used around hot water pipes, or chiller pipes, can be subject to expansion, or contraction of the pipework that will produce both tensile and shear loads on the product. If the product is incapable of meeting this criteria it is likely that it will fail when exposed to fire. The gap between the slab edge and a curtain wall construction will be subject to continuous movement of the curtain wall façade due to positive and negative wind loads and therefore, the firestopping product used in this application

tragedy that fire and smoke protection measures are necessary within air conditioning and ventilation systems. These are provided by the installations of dampers. Fire dampers are fitted where ductwork passes through fire compartment walls, or floors, as part of a fire control strategy. In normal circumstances, these dampers are held open by means of fusible links. When subjected to heat, these links fracture and allow the damper to close under the influence of the integral closing spring. The links are attached to the damper such that the dampers can be released manually for testing purposes. Dampers will be fail-safe by means of an electrical thermal release, which operates at 72°C or by loss of power, complying with BS5588.

We can clearly see from the Düsseldorf Airport tragedy that fire and smoke protection measures are necessary within air conditioning and ventilation systems. These are provided by the installations of dampers. Fire dampers are fitted where ductwork passes through fire compartment walls, or floors, as part of a fire control strategy. In normal circumstances, these dampers are held open by means of fusible links.

should be able to demonstrate its ability to recover its shape through cyclic testing.

One contentious area in the Building Regulations is whether it is necessary to fire-stop plastic penetrations with a diameter of 40mm or less. There are ambiguities in the wording that have led many to believe that this is not necessary. The interpretation supported by the **Association of Specialist Fire Protection (ASFP)** is that below 40mm it is not necessary to use proprietary systems but other forms of basic firestop must be used. Plastic pipes of this diameter will burn through, usually in under 5 minutes and two 40mm in a fire compartment wall are capable of letting through over 2,000 litres of smoke and noxious gasses in just 5 minutes; enough to fill 1,000 lungs.

Smoke is the biggest killer in a fire. 75% of fire deaths are through smoke inhalation and so it is critical that when applying fire-stop products a cold smoke seal is achieved. In a fire, the pressure within a compartment will build significantly. Most service penetrations are at a high level through a wall or through the soffit. These are the areas of highest pressure and under such pressure smoke and noxious gasses will be forced through the smallest gaps or imperfections of fit. Smoke expands rapidly to fill any sized void and can travel at up to 10m per second.

We can clearly see from the Düsseldorf Airport

So who carries the can if the compartmentation measures are proved to be inadequate after a fire has occurred? If we look at the two examples of Düsseldorf and Rosepark, we can see that it is invariably the building owners that are first in the firing line. In Düsseldorf, the airport authorities were sued by four insurance companies and were ordered to pay \$11m in compensation. The court judged the airport's building contractors to be negligent and so in turn the airport sued the contractors. There were also criminal prosecutions brought against the airport owners by the families of the deceased. In the Rosepark case, as partners of the firm running the home, three members of the Balmer family were accused of a total of twelve charges, including breaches of the Health and Safety at Work Act 1974, the Health and Safety at Work Regulations 1999, and of the Electricity at Work Regulations 1989. Legal delays have meant that an outcome has not been reached in the case but once again, families are awaiting the verdict in order to launch their own prosecutions. The fact is that everyone involved in the design, construction, product supply and running of a building could end up in court should the unthinkable occur.

Compartmentation is a simple strategy that can have a major effect on improving life safety and reducing property losses. It could also keep you out of court!

IFP

SUBSCRIPTIONS

INTERNATIONAL FIRE PROTECTION

GET YOUR SUBSCRIPTION NOW!!!



**IFP IS PUBLISHED 4 TIMES A YEAR
– FEBRUARY, MAY, AUGUST AND
NOVEMBER**

Name: _____

Company/Organisation: _____

Address: _____

Telephone: _____

Fax: _____

E-mail: _____

Start Subscription from Issue: _____

Subscription Rates: UK £50.00 Europe €60

Rest of World US \$70.00

Back Issues: US \$18.00, £10.00 or €15 each inclusive
of P&P (subject to availability)

METHODS OF PAYMENT:

Website Subscription: www.mdmpublishing.com

Cheque: _____ MDM Publishing Ltd.

Visa/Mastercard No: _____

Expiry Date: _____ Security Code: _____
(last three digits on reverse of card)

If paying by credit card please fax details. DO NOT post/mail.
Fax: +44 (0) 1935 426926

MDM Publishing Ltd.

The Abbey Manor Business Centre, The Abbey, Preston Road,
Yeovil, Somerset BA20 2EN, United Kingdom

ADVERTISERS' INDEX

Apollo Fire Detectors	20
Chemguard Inc	7
Clifford & Snell	48
Control Logic	68
Cranford Controls	50
CTEC	67
Dafo Fomtec	30
Dr Sthamer	33
Draeger Safety	41
Draka UK Ltd	IFC
Eusebi Impianti	63
Fire Fighting Enterprises	29
Fike Corporation	61
Firetrace	58
Halon Banking Systems	54
HD Fire Protect	11
IWMA	IBC
Janus Fire Systems	67
Kidde Fenwal – Chemetron	OBC
Metron Eledyne	35
Nittan UK Limited	4
OCV Control Valves	27
Patterson Pumps	57
Pilkington Deutschland GMBH	53
Rafiki Protection Limited	12
Rectorseal	47
Reliable Fire Sprinkler	36
Securiton AG	42
Sembcorp	29
Sensitron s.r.l.	42
Sevo Systems	16
STI Europe Ltd	51
TYCo Fire Suppression & Building Products	39
Vimpex	48
Xtralis	24

International Water Mist Conference 2009

23 - 24 September, 2009
London, United Kingdom

The 9th International Water Mist Conference is presented by the



in conjunction with independent member institutions

Please see
www.iwma.net
for more information

The conference includes a site visit on the second day at the British
Research Establishment (BRE) with real fire demonstrations

Registration

Name _____ First Name _____

Organization Address _____

Tel.: _____ Fax: _____ E-mail: _____

Payment received on or before 26 June

Payment received after 26 June

On-Site Registration

Members **460 Euro**

Members **520 Euro**

Members **540 Euro**

Non-Members **520 Euro**

Non-Members **580 Euro**

Non-Members **600 Euro**

☐ Bank transfer

☐ Credit Card*

*Payment by credit card available for attendees outside Europe through Paypal

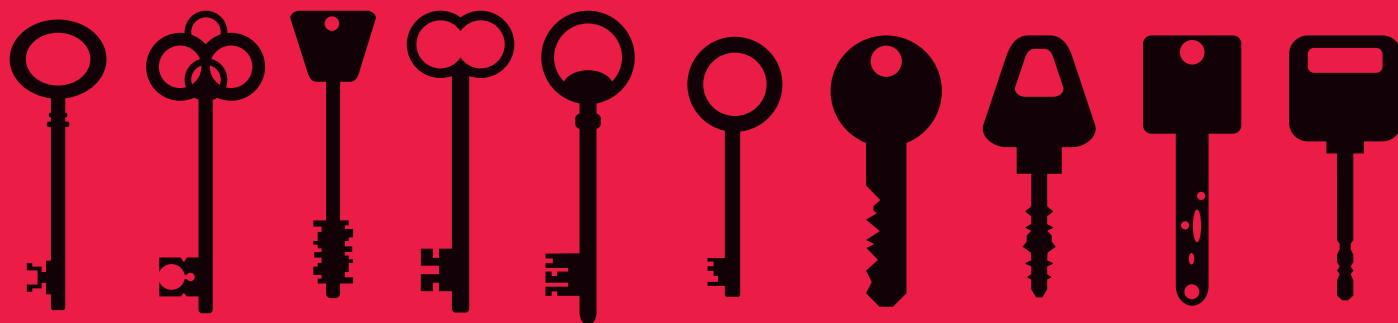
Date _____ Signature _____

Fax or mail this registration form to: **International Water Mist Association**, Biederitzer Str. 5, D-39175 Heyrothsberge, Germany,
or register online at **www.iwma.net**

Phone **+49 - 392 92 - 690 25**

Fax **+49 - 392 92 - 690 26**

E-mail **info@iwma.net**



Every industry needs a unique fire protection solution



The Key to Worldwide Protection.

Chemetron Fire Systems offers the widest range of fire protection solutions to suit your needs. Protecting your most vital assets and operations is our mission and passion. Including low pressure CO₂, water mist, Argonite™, 3M™ Novec™1230 fire protection fluid and FM-200®; our systems protect the assets most vital to you — data centers, power generation facilities, milling applications, LEED certified projects as well as other high value business systems, to name just a few.

With project management, installation and service Chemetron is the one manufacturer that can unlock the solution to all of your fire protection challenges.

Backed by *our* experience. Focused on *your* future.

With over 70 years of experience, let Chemetron provide the key to your unique challenge. Call us today at 708-748-1503 ext 411, or go to: www.chemetron.com

CHEMETRON
Fire Systems™

A UTC Fire & Security Company

IFP

An MDM PUBLICATION
Issue 39 – August 2009

www.mdmpublishing.com

INTERNATIONAL FIRE PROTECTION



THE GLOBAL VOICE FOR PASSIVE & ACTIVE FIRE PROTECTION

NEW - FIRETUF POWERPLUS

Enhanced power cable performance to meet BS 7346-6 and BS 7846.

BS 5839-1: 2002

Firetuf is approved to the highest standards, providing superior flame retardance and circuit integrity.

NON MELT AND DRIP

Firetuf products will not propagate and cause secondary fires.

EASY STRIP

Firetuf provides the fastest ever sheath removal, allowing reduced termination times.

ZERO HALOGEN LOW SMOKE

Our OHLS cables are manufactured to deliver optimum performance across a range of applications.

FUTURE PROOF

Concerned about new fire safety legislation? Relax, the Firetuf range is the highest standard cable available today.

AS FIRETUF AS THEY COME

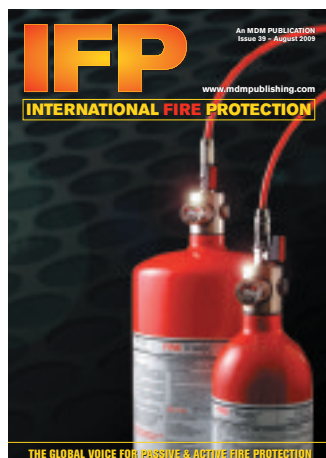
Firetuf® from Draka is the ultimate circuit integrity cable. Manufactured and approved to the highest standards, Firetuf delivers unbeatable benefits to specifiers and installers of fire engineering systems. And with our brand new Firetuf Powerplus range of power cables, delivering enhanced performance to meet BS 7346-6 and BS 7846, you can trust Draka to provide the complete solution to all your specialist cable needs. To find out more call 01332 345431 or visit our website www.drakauk.com



Draka UK Limited, P.O. Box 6500, Alfreton Road, Derby, DE21 4ZH, UK
Tel: +44 (0)1332 345431 Fax: +44 (0)1332 331237 email: firetuf@draka.com www.drakauk.com

IFP/Firetuf/0809

August 2009
Issue 39



Front cover picture courtesy of
Firetrace International

Publishers
Mark Seton & David Staddon

Editorial Contributors
Graham Lowe, Mark Froggatt,
Mike Wood, Tom Cortina, David
Owen, Nick Grant, Alan Brinson,
John Allen, Stuart Ball, Wilf
Butcher, Rob Harris, Matthias Ecke,
Rowland Davies

IFP is published quarterly by:
MDM Publishing Ltd
The Abbey Manor Business Centre,
The Abbey, Preston Road,
Yeovil, Somerset BA20 2EN
Tel: +44 (0) 1935 426 428
Fax: +44 (0) 1935 426 926
Email: dave.staddon@ifpmag.com
website: www.ifpmag.com
©All rights reserved

Annual Subscription
UK – £50.00 Europe – €60
Overseas – US\$70.00
ISSN – 1468-3873

DISCLAIMER:

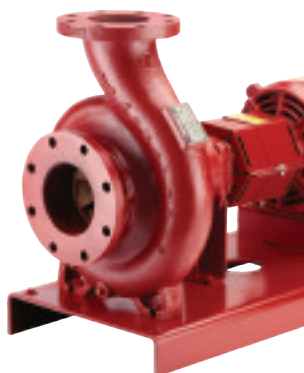
The views and opinions expressed in
INTERNATIONAL FIRE PROTECTION are not
necessarily those of MDM Publishing Ltd.
The magazine and publishers are in no
way responsible or legally liable for any
errors or anomalies made within the
editorial by our authors. All articles
are protected by copyright and written
permission must be sought from the
publishers for reprinting or any form of
duplication of any of the magazines
content. Any queries should be addressed
in writing to the publishers.

Reprints of articles are available on
request. Prices on application to the
Publishers.

Page design by Dorchester
Typesetting Group Ltd

Printed in the UK

Contents



23-26



33-34



43-44



48-50

5-20 News &
Product Profiles

23-26 Fire Pumps &
Controllers Round Up

29-30 Combines
flexibility, reliability
and ease-of-use

33-34 Foams for
Fixed Systems:
Fluorosurfactants add
effectiveness

37-40 Progress
with fire-resistant glass

41 'Shine and sign' –
Jargon with possible
deadly consequences!!

43-44 Need for full
scale fire testing

46-47 All you need
to know about BASEC

48-50 Watermist
helps resolve
residential fire
challenges

53-55 Working in
concert to deliver fire
protection to the Royal
Albert Hall

57-59 Sprinklers as
a Core Fire Safety
Measure

61-62 Technology
based Fire Pump
Controllers – ARE YOU
READY?

65-67 Key asset
protection – seeing the
bigger picture

69-71 Recognising
ill advised application
guidance for
intumescent coatings

73-75 Alarming
sense

77-79 Engineered
solutions demand more
from cable
manufacturers

80 Advertisers'
Index



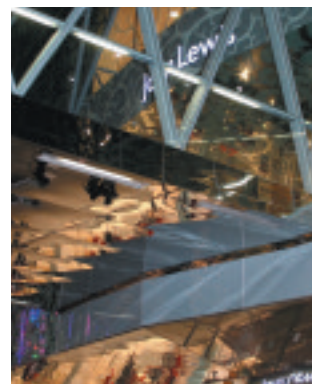
53-55



61-62



65-67



77-79



MDM Pu
WORLDWIDE

www.mdmpu

Hi-Tech P

FEATU

VIRTUAL ELECTRONIC MAGAZINES

BANNER ADVERTISEMENTS

FULL PDF FILE DOWNLOADS

LIVE LINKS

SIMPL
COMPA

MDM Publishing Ltd, The Abbey Manor Business Centre,

Tel: +44 (0) 1935 426 428

www.mdmpublishing.com

blishing Ltd
MEDIA

blishing.com **ortal Site** **RING**

FULL VIRTUAL ARCHIVE OF BACK ISSUES

LIVE REAL PAGE TURNING SOFTWARE

EVENTS PAGE

AND MUCH, MUCH MORE ...

Y NO **RISON**



The Abbey, Preston Road, Yeovil, Somerset BA20 2EN, UK

Fax: +44 (0) 1935 426 926

www.mdmpublishing.com

Recycle Your Halon.

The future of the planet
is in your hands.

It's imperative to the health of our planet that we reduce the impact that halon has on our atmosphere. Halon Banking Systems is dedicated to the environmentally responsible recycling and redeployment of halon for essential end-users. Let us help you dispose safely of your halon, and together, we can make the world a better place.

Contact us today 001-416-458-1990.



HALON BANKING SYSTEMS

8601 73rd Avenue Suite #11, Brooklyn Park, MN 55428 USA
Tel: 001-416-458-1990 Fax: 001-763-315-0399
info@halonbankingsystems.us | www.halonbankingsystems.com

Firetrace® to show UL & FM approved protection

FIRETRACE INTERNATIONAL will be showing its FIRETRACE® automatic fire detection and suppression system at Fire India in Mumbai, the only tube-operated system in the world tested as an automatic fire detection and suppression system. The ISO 9001-certified company will also be showcasing a selection of the 150,000 successful FIRETRACE installations completed around the world, including the Delhi Metro and the new third terminal at Delhi's Indira Gandhi International Airport.

The tried-and-tested system is unique among tube-operated systems to have approval and accreditation from such world renowned organisations as UL [Underwriters Laboratories], FM [Factory Mutual], and more than 25 other independent accreditation and approvals agencies. FIRETRACE is also CE [Conformité Européenne or European Conformity] marked, which confirms that it complies with the essential requirements of the relevant European health, safety and environmental protection legislation. It also stands apart from its competitors by being able to be supplied with a variety of suppression agents, the choice of which is tailored to the precise fire risk.

Currently, the FIRETRACE suppression options include the latest environmentally-acceptable clean agents such as 3M™ Novec™ 1230 Fire Suppression Fluid and DuPont™ FM-200®,



C-TEC's new stainless steel enclosure now available

C-TEC's latest addition to its popular SigTEL disabled refuge range is a stylish state-of-the-art stainless steel anti-tamper enclosure.

Elegantly designed to add a touch of glamour to the interior of any building, the BF359/3 brushed stainless steel enclosure has been specifically manufactured to enhance the appearance and safeguard ECU-8 disabled refuge controllers to ensure that they remain fully operational at all times.

The enclosure requires one of two lock kits – the BF359/3CL cam lock kit or the BF359/3SL electromagnetic solenoid kit, the latter of which can be configured using third-party equipment to unlock the enclosure door when the system is active.

Says Charlotte Manley, C-TEC's Sales Director: "Customer demand for this product is such that we have already received a huge amount of advance



orders. The enclosure is ideal for prestigious buildings and on sites where vandalism has been reported."

Enclosures are also available for C-TEC's XFP fire alarm control panel and Quantec addressable call controller.

For more information, please contact the company's sales desk on 01942 322744

UL and FM-approved FIRETRACE was chosen for the Delhi Metro and Delhi Airport's new Terminal 3

together with ABC dry chemical agents and AFFF foam. CO₂ [carbon dioxide] is another FIRETRACE extinguishant, although the company points out that extreme care has to be taken to ensure that it is not used in any applications where there is a risk of thermal shock to delicate electrical equipment.

While electrical control cabinets feature prominently in the list of FIRETRACE applications, today systems are also to be found protecting business-critical "micro-environments" in a wide spectrum of industries. These include: IT servers and telecommunications facilities; ventilation and air conditioning plant and petrochemical control rooms; pharmaceutical laboratory fume hoods and dust extraction equipment; wind turbines and engine test cells; bus and coach engine compartments and throughout the mass transit sector.

Genuine FIRETRACE is available only via Firetrace International's global network of authorised distributors. These trading partners are skilled in hazard analysis, agent and system selection, installation, commissioning and support, and use only genuine FIRETRACE components. Details of these authorised distributors are available by contacting Firetrace International at info@firetrace.com.

The FIRETRACE EMEA head office is in the UK and can be contacted on +44 (0) 1293 780390, while the company's website is at www.firetrace.com

Janus Fire Systems

Fire suppression

In determining the type of fixed fire extinguishing system for new installations or when upgrading an existing system there are many options to consider. Historically, Halon 1301 was used in total flooding of occupied high value commercial facilities.

FM200

Janus Fire Systems manufactures FM-200® clean agent extinguishing systems which protect critical installations such as computer rooms, server farms, switch gear rooms, high risk production lines, telecommunications centers, archival storage facilities and other high value assets.

Janus Fire Systems equipment is rigorously tested by internationally recognized laboratories as well as meeting EN 12094 Fixed Firefighting Systems requirements, FM-200® is safe for humans, deploys and extinguishes fire quickly and cleanly, minimizing collateral damage.

The seasoned Janus Fire Systems team is knowledgeable and ready to provide equipment and solutions for the complexities of fire protection associated with commercial and industrial risks.

CO₂

Low and High Pressure Carbon dioxide systems have been primarily employed in industrial settings where a three dimensional non-damaging extinguishing agent was required. Carbon dioxide is the only clean extinguishant capable of being used for Local Application hazards.

Carbon dioxide is an effective extinguishing agent but must be used judiciously with the latest controls to reduce personnel hazards. Assessment of each environment to be protected is the number one priority.

Power Generation

Our Power Generation Industry experience is second to none, Janus Fire Systems designs and integrates special hazard systems using a variety of products. Carbon Dioxide Fire Protection Systems have been effectively used to protect Base Load Fossil and Nuclear Plants, as well as, Combustion Gas Turbines for years.

In an unprecedented move, the U.S. NFPA 12 committee mandated safety upgrades for new and existing Carbon Dioxide Systems to be completed by December 31, 2008. The National Fire Protection Association's (NFPA) Standard 12 has been the definitive guide for design, installation and maintenance of U.S. designed Carbon Dioxide Systems since its adoption in 1929.

Required system modifications include upgraded signage, lock-out valves, odorizers, and pneumatic discharge delay timers; all to reduce the chance of a carbon dioxide discharge in an occupied space.



Ingenuity

The Janus Fire Systems engineering team reviewed existing low pressure Carbon Dioxide systems with the focus of becoming compliant with the new standard. In the process, they designed a proprietary Universal Pneumatic Time Delay System that meets the requirements of NFPA 12, section 4.5.6.1. This preassembled unit can retrofit all brands of Low Pressure Carbon Dioxide Systems.

Your gateway to a new kind of service.
www.janusfiresystems.com

IFP



For further information
please contact:
Fred Hildebrandt
Janus Fire Systems
1102 Rupcich Drive
Crown Point, IN 46307 USA
1-219-663-1600
www.janusfiresystems.com

Engineered Fire Protection Systems & Solutions

Lambda Limbo



Kingspan **Kooltherm** K-range

The Kingspan Kooltherm K-range won't let you fall flat when it comes to achieving the lowest U-values.

- Lambda value as low as 0.020 W/m·K
- Solutions for new build and refurbishment now and in the future
- Will not sag or slump
- Resistant to the passage of water vapour and air infiltration
- Flood resilient
- Class O / Low Risk fire rating

Kingspan Kooltherm is thinnest commonly used insulation for any required U-value...ensuring you're never left in limbo.

Visit our website for more details or contact us for your free product selector.



Further information on the Kingspan range is available on:

Tel: 0870 733 8333 (UK)

Email: literature.uk@insulation.kingspan.com
www.insulation.kingspan.com

Pembridge, Leominster, Herefordshire HR6 9LA, UK

Introducing a total solution in smoke detector testing



smoke**sabre**™ is the solution to problems previously associated with aerosol smoke detector testers

smoke**sabre**™ delivers...

- More tests per can
- Faster detector activation and clearing
- Lowest cost per test
- The end of harmful residue – risk is designed out with the sabre
- Silicon free testing
- Eco-responsibility – 100% bio-degradable sabre, ozone friendly, no CFCs and GWP free propellant*
- Detector manufacturer endorsement and UL Listing
- 150ml can



SIGNALING



Fire Alarm Equipment
77TL
Aerosol Smoke
Detector Tester

Testing with **smokesabre**™ aids compliance with codes and standards globally.

"Point smoke detectors should be functionally tested by a method that confirms that smoke can enter the detector chamber and produce a fire alarm signal (e.g.: by use of apparatus that generates simulated smoke or suitable aerosols around the detector). It should be ensured that the material used does not cause damage to, or affect the subsequent performance of, the detector..."

BS5839 1: 2002; 45.4 (D)

Flick'n Test
More than canned smoke!

"...the detectors shall be tested in place to ensure smoke entry into the sensing chamber and an alarm response."

NFPA 72 Chapter 10
(10.4.2.2 3g)



ully new concept testing!

How does it work?

smokesabre™ is a major step forward in the design of aerosol smoke detector testers. All other pressurised aerosol smoke alarm testers have the inherent drawback that, if misused, they leave harmful residue on the casing and/or inside the chamber of the detector. This residue can discolour the detector plastic, can attract dust, affect sensitivity and, in some cases, lead to corrosion, cracking or even complete failure of the detector. Residue occurs when testing aerosols are used too close to the detector, or smoke alarm, despite instructions not to do so.

smokesabre™ inhibits use too close to the detector and eliminates harmful residue while focussing and targeting the canned smoke test gas.

When **smokesabre™** is in the closed position the sabre prevents access to the spray button. The aerosol can only be activated when the sabre is fully extended. In use, air is drawn through the holes in the sabre and this, coupled with the venturi effect involved, assists the velocity and vaporisation process of the airborne 'smoke'

particles. The result is a more effective test, delivering better detector activation, using less gas per test, and reducing costs while eliminating harmful residue.

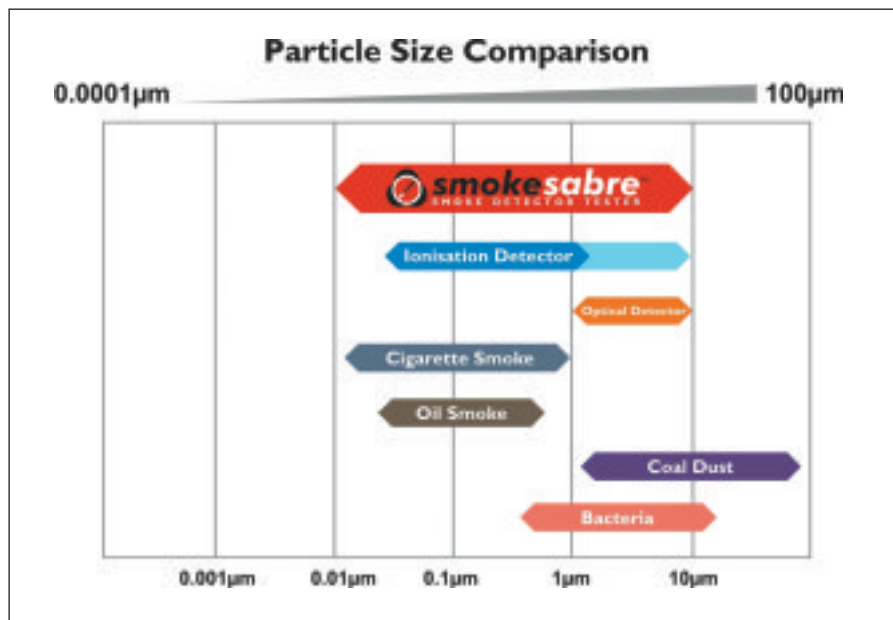
Other products may be recommended as best used with accessory devices to prevent **smokesabre™** too close. With **smokesabre™** there is no choice. The sabre is part of the product and cannot be used without it!

smokesabre™ is a universal test product covering the sensitivity range of all smoke detectors (see particle size comparison chart).

The extending sabre is made of 100% bio-degradable plastic making **smokesabre™** the only smoke detector test aerosol to be both recyclable and eco-friendly*.

smokesabre™ is UL listed, meets global testing standards, and is approved by major smoke detector manufacturers. **IFP**

**Depending on product variant*



smokesabre™
SMOKE DETECTOR TESTER

For further information visit: www.smokesabre.com

Supplying the Global Market

EATON's Cutler-Hammer fire pump controllers are supplied for all types of industrial and commercial applications around the world. They can be counted on to start every time, without fail when there is a call to start a fire pump in an emergency situation – because life safety depends on it.

They are designed and manufactured in accordance with the strictest fire protection, electrical and insurance codes in the world, thereby ensuring they meet or exceed all required standards.

Fire Pump Controller Family Diesel Engine Fire Pump Controllers

Diesel Plus

Electric Fire Pump Controllers

FD30 Across-the Line
FD40 Part Winding
FD50 Primary Resistor
FD60 Autotransformer
FD70 Wye Delta (Star-Delta) Open
FD80 Wye Delta (Star-Delta) Closed
FD90 Soft Start
FD20 Limited Service
FT Series Transfer Switch Controllers
FDAP-M Remote Alarm Panels
FDJP/JY Jockey Pump
Controllers
FDR Residential
FPMP Multi-Pack
BPC/BPV Booster Pump
Controllers



CANBUS (SAE J1939) engine port
Communicate to engine ECM

Engine Board

Incoming power terminals
Connect 120/220V power wires

Line filter
Reduces/eliminates incoming voltage transients

AC power disconnect breaker
Switch AC power on or off
Illuminates when energized

Circuit breakers
CB1: Battery #1 Breaker
CB2: Battery #2 Breaker
LED's illuminate when energized

Output relays
Fuel Stop
Crank Battery #1
Crank Battery #2
LED's indicate coil status
30A trace on the circuit board

For more information please contact:

Eaton Corporation
10725 – 25th Street NE # 124
Calgary, Alberta
Canada T3N 0A4
Tel: +1-403-717-2000
Fax: +1-403-717-0567
Email: chcfirepump@eaton.com
Website: www.chfire.com

Diesel Plus – Diesel Engine Controllers

Features

Dual output

12 or 24Vdc outputs
DIP Switch Selectable

Universal supply voltage

Supply Voltage Range: 90V ac to 240V ac

Reduced size

W: 19 x D:10.5 x H: 33 inches
Feet: 18 Inches

Modbus communications

RTU and ASCII transmission modes

USB port

Download message history, statistics, diagnostics and status
Upload custom messages, firmware updates

Mode selector

Manual-Off-Auto selector switch
Front panel mounted behind a breakable glass cover

Keypad/LCD display

Front panel accessible
Backlit, 4x40 character LCD

Embedded web pages

View current status, set points, diagnostics and history
Access pages via ethernet

Power I/O Board

Provides power to controller display board
Accepts customer inputs
Houses 6 control relays
Accepts optional relay output boards

Ports

Serial communication ports
Monitor and record key charger data

CGI in demand as Irish 60/30 market booms

The 60 minute integrity and 30 minute insulation (60/30) fire safety glass market is booming in the Republic of Ireland, according to leading manufacturer CGI INTERNATIONAL.

CGI International's sales manager, Paul Gee, believes that value for money and a quest for larger tested sizes are the biggest driving forces behind 60/30 demand.

Paul said: "This appetite came from the need for larger tested sizes to meet the challenges of modern building design and architects' demands.

"The tested size limits of 11mm 60 minute integrity fire safety glass have prompted people to specify-up, opting for a 15mm product which would meet their larger size requirements, afford 60 minute integrity and include 30 minute insulation protection too.

"What started off as extra value from the 30 minute insulation has actually become a market requirement and is now critical for security and peace of mind.

He concluded: "CGI is the only manufacturer with certified products and test evidence for 60/30 protection to both British and European standards and this is in real demand in Ireland."

In single glazed options for timber screens of 60 minutes integrity and 30 minutes insulation (60/30), CGI's Fireswiss Foam has a certified maximum sizes of 1200 (wide) x 2500mm (high)/1500mm (wide) x 2500mm (high) with a



maximum pane area of 3m² (the aspect ratio of the glass may be unlimited within these aperture dimensions). This covers both internal and external applications in particular and glass sizes in both single-glazed and IGUs (now possible in excess of three metres high) making the installation of full-height glazed partitions possible.

The tests were carried out to the European fire resistance test standard EN1364 part1 and have been verified and incorporated into the Warrington Certification scheme CERTIFIRE in the certificate CF437.

For more information please contact CGI on 01942 710720

Clifford & Snell

The latest technology for audible and visual signalling products in the hazardous area markets

By Trevor Gage

Director & General
Manager, Clifford &
Snell

It is clearly evident, with the constant pressure brought about by the 'Credit Crunch', that some manufacturers in many different markets are attempting to remain competitive by bringing down costs by lowering the quality of their product or reducing staffing levels which has resulted in long lead times for delivery to customers. Some industries, however, cannot alter the standards of their products and one such market is Hazardous Areas.

Established in 1929 and a leading manufacturer of Hazardous Area products, Clifford & Snell pioneered research in the area of audible and visual signalling devices and launched the first electronic sounder in 1967. Since then, the company's customers have come to expect quality products manufactured to the highest standards. This is achieved through attention to detail throughout the development process and the innovative design of its products, which are unique to Clifford & Snell. Compliance to BS EN ISO 9001:2008 Quality Management System ensures a consistent and reliable product, which are in many cases used in life safety applications.

Having set up new offices in Houston last year to service the requirements of both North and South America, the company launched its latest product additions at the NFPA exhibition in Chicago. During the 18 months since the launch of Clifford & Snell's offices in the USA, Phil Hausman – Business Development Manager, has made significant progress through exhibiting the products and marketing the Clifford & Snell brand across the United States. This has enabled the company to establish new accounts and provide a deserving customer base with a much needed alternative product range for all industry sectors, including Industrial, Oil & Gas/Petrochemical, Building/Construction and General Signalling.

The Yodalex Super Series of highly reliable Hazardous Area GRP sounders, strobes and combination units is a significant step forward for the signalling industry as it incorporates the use of new materials technology as well as a considerable improvement in intrinsic product design. The omni-directional Sounder and Strobe, together with the combination Sounder/Strobe, now offers the industry a fully integrated Explosion-proof enclosure with an Ex d housing, incorporating machined flame path interfaces throughout the products design. This ensures a safe and flexible sounder designed to meet the stringent demands of Hazardous Areas applications.

Based on a modular design with a single flame-proof enclosure forming the base of the structure



Range of latest products at NFPA Chicago from London-based Clifford & Snell including hazardous area devices

for the entire series, the light-weight Glass-Reinforced Polyester (GRP) Series includes the YO9 Directional Sounder, the YO6 Super Omni Directional Sounder, the V6 Super Omni Directional Beacon and the fully integrated YL6 Super Sounder/Strobe combination unit which offers a high output sounder with 115dB @ 1 metre and a xenon beacon with up to 20J light output. The entire range can be flush-mounted, providing the user with a slim profile beacon, or a 'U' bracket can be fitted to offer additional mounting options. The corrosion-resistant GRP housing has been designed specifically to meet the requirements of potentially explosives atmospheres with the added benefit of being light-weight and incorporating the unique design of the Yodalex Series.

Onshore and offshore requirements are addressed, as the enclosure is finished in high-performance paint which offers good resistance to harsh environmental conditions. Operational temperature ranges of -60°C to +60°C are offered to accommodate the extreme temperature variations found in the soaring temperatures of desert environments, covering applications from the Middle East to the plummeting Arctic conditions in North America and in Northern Russia. Designed to meet ATEX, IECEx, GOST-R & UL Listing Approvals, these units also provide excellent Ingress Protection.

Clifford & Snell's global distribution network and its full-colour product catalogue allows for the highest levels of customer service.

IFP

For further details, contact:

Trevor Gage
Clifford & Snell
Tom Cribb Road
Thamesmead
London SE28 0BH
Tel: +44 (0) 208 317 1717
Fax: +44 (0) 208 317 2400
Email:
sales@cliffordandsnell.com
Website:
www.cliffordandsnell.com

System Sensor EU

The new Series 200 Advanced family moves



System Sensor is the world's largest supplier of fire detectors to the commercial market, a position maintained through continual investment in research and development at technology centres strategically located in each of our major market areas: North America, Europe and the Far East.

By Stuart Ball

System Sensor Europe

Our flagship addressable detector family, the Series 200, has proved itself over many years to be one of the most effective, stable and technically advanced families of point fire detectors available. The current generation, the Series 200 *plus*, was introduced as an upgrade over seven years ago; with advances in technology and changes in market demands, the latest evolution of the range has been developed.

The new *Series 200 Advanced* delivers a completely new mechanical and digital communications protocol platform. The complete range of core detection devices, an upgraded range of audible-visual warning indicators and upgraded manual call points and modules are being launched simultaneously. All devices are fully approved to the relevant parts of EN54 by independent test houses. Developed as the result of in-depth consultation with our fire system integration partners, *Series 200 Advanced* moves the science of fire detection, and the functionality of an addressable fire system, to a completely new level. *Series 200 Advanced* delivers demonstrable, repeatable improvements in early fire detection performance combined with significantly increased false alarm immunity.

The *Series 200 Advanced* features a completely new mechanical platform and housing that provides more efficient smoke entry into the chamber and includes a tri colour LED to provide comprehensive local status indication to assist with installation, commissioning and troubleshooting. The new design of optical detection chamber delivers such a dramatic reduction in the frequency of false alarms caused by the impact of settled dust or insect ingress that these

common triggers can, to all intents and purposes, now be disregarded, giving a considerable impact on overall system performance. The new Advanced Protocol gives greater control, configurability and device management whilst enabling the overall system to be optimised to the location and use of the building with far greater flexibility than ever before. A single, completely new base design caters for both surface mount and flush loop cabling with installation time kept to a minimum through the provision of as large an aperture as possible. End users will benefit from improved protection, greater configurability, less disruption and a reduction in the costs associated with false alarms.

Technology leadership

Series 200 Advanced is the result of the accrued experience gained from the installed base of many tens of millions of devices. The result is a very efficient chamber design, proven in extensive laboratory testing and real world installations to be more efficient, dust and insect resistant and less susceptible to fault in high air velocities or back pressure. Extensive hydrodynamic modelling has confirmed the greater efficiency of the new chamber and housing shape combination. Large-scale integration of the all-new electronics, highly automated surface mount PCB assembly, constant testing throughout the manufacturing process and laser board cutting improves quality and reliability.

The new digital protocol provides more efficient use of the available power from the panel to increase the number of devices per loop and provides greater management and control at the

For more information please contact:

Stuart Ball
System Sensor Europe
 KAC House
 Thornhill Road
 North Moons Moat
 Redditch B98 9ND
 UK
 Tel: + 44 1527 406700
 Fax: + 44 1527 406699
 Email:
 sse.sales@systemsensor.com
 Website:
 www.systemsensoreurope.com

rope

smoke detection technology to a new level

system, loop and device levels. Taken together, these individual advances have produced a clear leader when compared to any other detector available from any manufacturer: the performance of each product leads its class.

The Series 200 Advanced hardware platform

The family consists of six new detection devices: PTIR and Photo-Thermal multi-sensor devices, optical smoke detector, 58° and 78° fixed temperature and rate of rise thermal detectors. Next generation control modules, addressable call points and AV products are also introduced. All new generation devices operate under the Advanced Protocol, enabling greater control and management and are available with or without embedded configurable isolation.

Overall benefits

Reduced lifetime cost of ownership

The Advanced Protocol allows maintenance intervals to be optimised reducing disruption to the system and costs; it also enables much more information about the status each device to be collected from the panel, optimising maintenance scheduling and limiting *in situ* device failures.

Naturally, we have an obligation to minimise our environmental impact, and even though the RoHS and WEEE directives are currently not applicable to fixed installation fire systems, the new devices fully conform, reducing their environmental impact and simplifying end of life disposal.

Enhanced system configuration and control

The device level monitoring and control provided by the Advanced Protocol enable system-wide, fire zone specific and individual detectors to be configured to match the location, the occupation levels and the time of day. Such fine-tuning will ensure peak performance in the detection of an actual fire and a high threshold to common causes of nuisance and false alarms. Maintenance intervals are optimised and early warnings of incipient faults enable the cause to be rectified before an actual fault is signalled to the panel.

Hardware benefits

Integral isolation

Installation costs are typically 40% of an installation. These are reduced, and future loop reconfigurations made easier, by introducing devices with in-built isolation, doing away with the need for separate isolator modules or for devices to be installed in dedicated isolator bases.

New optical chamber design

Extensive fundamental research has been undertaken into the design of the new optical chamber. The detection technology remains as a single emitter/receiver configuration; our research shows that using dual angle or dual wavelength detection does not improve performance.

Lower quiescent current draw

The average quiescent current consumption per detector is reduced by approximately 50%, increasing the number of devices on the loop and enabling smaller battery backup capacity to be fitted without reducing hold-up time. The reduced current draw enables the number of sounders on the loop to be doubled, making the system more effective.

Software advantages

The new digital communications protocol is extremely robust and gives the fire system's designer and integrator far more control over the operation of the system. It is fully backwards compatible with existing systems, but each loop now has the capability of a potential 159 addresses in both the detector and module space. A new feature, group polling, improves system performance considerably. By implementing group polling, the response time for an alarm to be detected is reduced to less than 2.5 seconds, and, even with complex cause and effect programming in place, the time for initiation of all output devices will be less than 10 seconds. Warning devices physically adjacent to the detector in alarm will operate within the UK required maximum of 3 seconds.

Output devices such as sounders and strobes are fully controllable from the panel, enabling tone selection and output levels to be set according to the alarm status; all sounders on a loop are automatically synchronised.

The panel has access to both raw and processed sensing element data, enabling interrogation of the absolute values of parameters such as drift status, drift fault and chamber fault. By using regular device polling, pre-emptive maintenance can be undertaken, minimising fault warnings.

Thinking about the future

The new devices and communications protocol are designed for use during the next decade. With the trend towards greater convergence of the various building management systems already well established, it is not difficult to envisage the fire system becoming more deeply integrated with the HVAC and security systems. As the panel has access to the absolute output levels of each sensor, it is possible to visualise the fire panel being used as the major source of environmental information into an integrated building management system. The temperature sensor could be used to control the air conditioning and the IR sensor in PTIR and COPTIR could be used to control the room lighting. Given that a fire system will be mandatory, a reduction in installation and equipment costs for the building management system could reduce the cost of building ownership.

Conclusions

The Series 200 Advanced is a major step forward in fire detection technology. Its introduction improves the speed of detection, reduces the risk and incidence of false alarms and provides a significant increase in the effectiveness of addressable fire systems in commercial premises, providing enhanced life safety for the building's occupants.

IFP

Kingspan first to make the grade with LABC

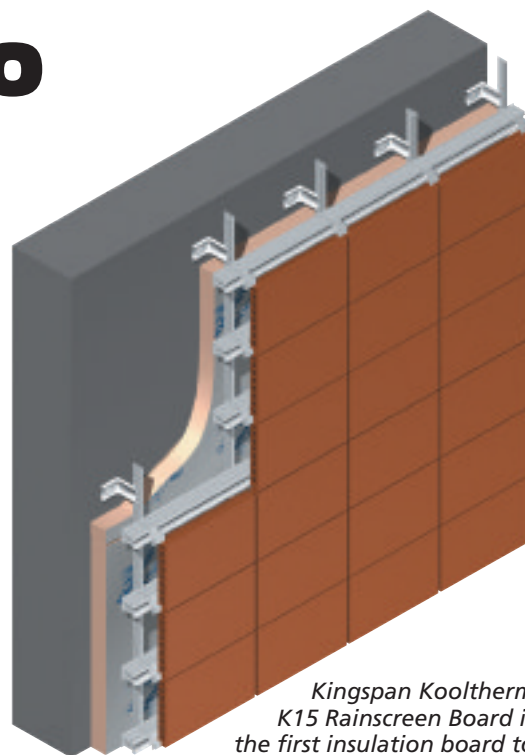
KINGSPAN INSULATION is pleased to announce that its Kooltherm K15 Rainscreen Board is the first insulation board to achieve LABC Type Approval. Kingspan Kooltherm K15 Rainscreen Board is a premium performance rigid phenolic board, designed for use behind rainscreen cladding systems and is used in a range of applications such as offices, schools and hospitals.

The LABC certificate eases the planning process projects have to go through, and applies wherever the overall wall construction reflects the following standard design details:

- An inner substrate of reinforced concrete, masonry, or hollow

metal-framed walling forming part of the building superstructure.

- A continuous layer of Kingspan Kooltherm K15 fixed with a minimum of 9 proprietary fasteners per board and with taped joints.
- A ventilated airspace of at least 50 mm.
- A rainscreen cladding weathering layer structurally fixed back to the inner substrate in accordance with manufacturers recommendations and design requirements.



Kingspan Kooltherm K15 Rainscreen Board is the first insulation board to achieve LABC approval

Loop powered addressable range from Cranford Controls

CRANFORD CONTROLS core product range of conventional sounders and beacons is further enhanced by the addition of the loop powered addressable range of products. In collaboration with C-TEC we are able to offer the well proven spatial and base sounder products as a complete loop powered addressable product family. This mutually convenient collaboration between the two companies allows the use of proven addressable electronic technology coupled with the Cranford Controls sounder and beacon electronic platforms housed in Cranford Controls body plastic housing. This offers the customer the best of both worlds when choosing loop powered beacons and sounders. DIL switch selectable addressing further enhances the ease of fitment and commissioning for the install engineer.

The range consists of VTG sounders, VCT sounder base and VTB combined sounder/beacons. All products have an attractive low profile design, available in red or white fire retardant ABS, and provide an excellent lateral sound distribution with adjustable volume on all models.

The products all offer a choice of 3 evacuate tones (continuous, warble or sweep) along with 1 alert tone. VTG and VTB units come complete with the choice of an IP42 rated shallow base, with a wide cable entry access hole, or IP65 deep base with top and side entry points; both, however, feature a bayonet fixing arrangement which ensures 'quick-fit' installation. The VCT base sounder can be



used either with a smoke detector attached or with a cover plate for those who wish to use the product as a stand alone sounder.

Group addressing facility is available on both the VTG and VTB products allowing for multiple units to be activated simultaneously. All of these products can be set to operate in master or shadow mode; when multiple shadow sounders are in use they can all be given the same ID address as one 'master' sounder, ideal for heavily populated systems.

For further information on the addressable loop powered range and information on any additional products to help fully equip your fire safety system please contact Cranford Controls on +44 (0) 1420 592 444 or email sales@cranfordcontrols.com

With a thermal conductivity as low as 0.020 W/m.K and a Class O/Low Risk fire rated insulation core and negligible smoke obscuration, not only does Kooltherm K15 Rainscreen Board meet the requirements for thermal performance, but the LABC summary of the 'Main Issues Considered' states that since K15 can be considered a 'material of limited combustibility', it is suitable in all situations shown on Diagram 40 of Approved Document B Volume 2, including those parts of a building more than 18m above ground.

The product is also unaffected by air infiltration and is resistant to the passage of water vapour, it remains the only insulation board that has successfully met the requirements of the BBA and holds LABC System Approval.

LABC approval is issued by one local authority and accepted by all other local authorities throughout England and Wales. This approval covers compliance with the Building Regulations and a register of approved designs is kept by LABC to enable local authority building control officers to look up and check design approvals.

Kingspan Insulation offers an extensive range of insulation solutions for both new build and refurbishment projects. Specifiers, stockists and contractors are supported with a comprehensive and free technical advisory service.

For more information please contact:
UK

Tel: +44 (0) 870 733 8333

Fax: +44 (0) 1544 387 299

Email: literature.uk@insulation.kingspan.com

insulation.kingspan.com

Website: www.insulation.kingspan.com

Minimax – experience and competence



Minimax has stood for experience and competence in fire protection for over 100 years

- High quality **fire protection products**, such as fire extinguishers, wall hydrants, smoke extraction systems, small extinguishing systems etc., which are constantly further developed and optimised to meet current technical expertise.
- **Services** optimally coordinated to customer needs and applications, such as fire protection consulting and inspection, maintenance and service concepts, as well as training and further education seminars.

As the only supplier of total solutions our extensive service and product portfolio combines all the measures necessary for a custom-tailored fire protection solution, which also represents the best cost/safety ratio.

The result of years of research and development work is the polished, innovative products developed and produced to meet the highest "Made in Germany" standards and – given the appropriate maintenance – guarantee the longest service life. Ongoing quality assurance measures and optimisation ensure that this remains so.

The wide distribution network of Minimax employees guarantees that every customer receives personal support, including high delivery and service availability.

As a one-stop service provider in fire protection Minimax is the best partner to fully serve customers' needs in matters of fire protection. **IFP**

For further details, please contact:
Minimax Mobile Services GmbH & Co. KG
 Export Department
 Minimaxstr. 1
 72574 Bad Urach/Germany
 Tel: 0049-7125-154-133
 Fax: 0049-7125-154-166
 Email: exportmobile@minimax.de



MINIMAX

Radio+ wireless system from Cooper Fulleon

A new wireless system Radio+ provides a fire detection and alarm system using secure wireless connections between the field devices and the control panels.

For both business and leisure radio technology is now common place. Such are the advances made in wireless technologies in recent years that most people use wireless devices without a second thought.

Radio+ is a new fire detection system using secure wireless connections between the field devices and the control panels.

Based on well proven components the sensors, sounders, beacons and call points give Radio+ a highly reliable foundation into which the wireless technology has been integrated to provide a fully featured analogue addressable fire detection and alarm system.

The development of Radio+ has tracked the progress of the European standard EN54-25 "Fire detection and fire alarm systems. Components using radio links", and has therefore been designed to conform fully with all aspects of this document.

System overview

Control panel

The Radio+ Fire Control Panel is equipped to operate full bi-directional communication to all devices and is designed to comply with all current applicable European standards.

- 250 radio devices per panel
- 16 detection zones
- large LCD for clear indication of status and programming
- comprehensive panel i/o facilities
- full bi-directional radio communication

Detectors

Radio+ detectors are based on multi-sensor technologies using combinations of optical smoke detection and both fixed temperature and rate of rise heat detection. These elements can be selected to provide optimum detection of all types of fire and operating conditions.

Radio+ Detector

- multi-sensor technology
- tamper alarm
- first fix base
- concealed antennas

Radio+ Detector AV Unit

As Radio+ detector integrated with:

- highly visible led alarm beacon
- alarm sounder
- 3 volume settings
- 8 tones



Manual call point

Radio+ Manual Call Points share all the features of the Universal CX on which they are based, in addition a tamper switch is provided so that an alarm is transmitted to the Radio+ Control Panel if the call point is dismantled or removed.

- reassurance led
- glass or plastic resettable element
- tamper alarm
- concealed antennas

Open area sounder & beacon

Radio+ Sounder/Beacons are based on the Symphoni AV to provide a combined audible and visual alarm to suit applications affected by the Disabilities Discrimination Act.

- 100db(a) sounder
- integrated highly efficient led beacon
- tamper alarm
- 3 volume settings
- 8 tones

Survey kit

A radio survey is the key to correct and trouble-free functioning of any wireless fire detection system.

The Radio+ survey kit is supplied in a handy carrying case and operates both as an initial survey instrument and then as a commissioning tool once the equipment has been installed.

Availability

Radio+ will be available in the UK from October 09 and globally from early 2010.



For further enquiries please contact:
Cooper Fulleon on +44
(0)1633 628526

Why...

...invest in detector testing?



Just one of the reasons to invest in **testifire** - **Smoke**, **Heat** & **CO** testing in one unit saves you time and money!

Find out how quickly **testifire** pays for itself - visit: www.testifire.com/payback



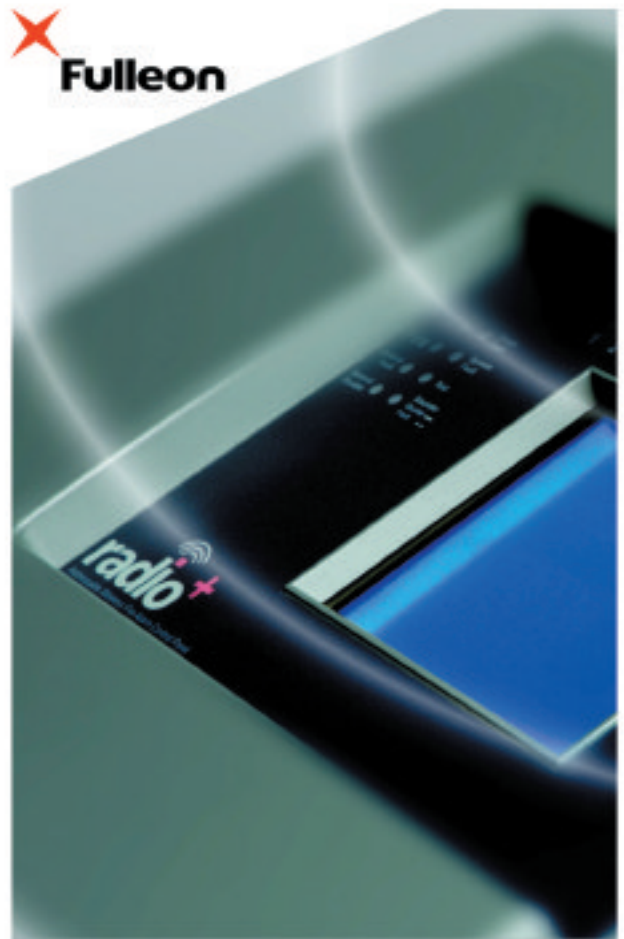
 **testifire**[®]
MULTI-STIMULUS DETECTOR TESTER

fast | safe | legal | smart | green

www.testifire.com



Fulleon



Introducing **radio+**

The Complete wireless system from Cooper Fulleon - Covering the distance + a bit more

- Operates over distances up to 2km in free air
- Meets the requirements of EN54-25
- Detector with integrated AV unit
- Reduced Installation costs
- Single person survey and installation tool
- Uses easily available off the shelf batteries
- Addressable 250 device system



COOPER Notification

www.cooperfulleon.com

T: +44 (0)1633 628 500 F: +44 (0)1633 866 346
sales@fulleon.co.uk www.cooperfulleon.com

Sensitron: safety and security for a better life

Sensitron srl turned 20 last year and the Company can boast a rank amongst the leading manufacturers in the gas detection market. Nonetheless, the wish to grow further and explore new market niches and new technologies is the spirit that keeps on leading us all.

Sensitron was founded in 1988 by Dr Frigo, MD, with the mission to becoming the Italian reference point in gas detection. Within a decade the mission was fully accomplished and the following decade was totally dedicated to give Sensitron an international visibility.

In the first decade Sensitron designed and developed a range of fixed gas detectors unrivalled in Italy. The choice of using catalytic sensors or electrochemical cells instead of the semiconductor sensors still largely employed in the 90's by the Italian manufacturers made Sensitron the first Italian Company that could compete against well reputed European manufacturers.

As soon as the new millennium turned, Sensitron was ready to step into the European market with a wide choice of fully ATEX certified detectors.

We had always believed that the ATEX directive would have been our 'bridge' to Europe and we concentrated a lot of effort in developing detectors that could guarantee a reliability and performance as high as most of our European competitors could. Sensitron has been the first Italian Company to get ATEX certified detectors since 2001, well in advance compared to many European Manufacturers and well before the ATEX directive entered on force in June 2003.

It was a long term investment that allowed Sensitron's reputation to grow earning a day by day share in a market where, in a few year's, our name became a consolidated brand.

Thanks to the growing business volume, we endeavoured to expand our production facilities. In 2005 Sensitron bought a multi storey building that could offer modern and comfortable offices and high tech testing facilities. A large training room was set up to offer a fully equipped area to customers willing to have comprehensive training sessions on our systems.

Indeed, one of the most important developments over the last years is customers' awareness that gas detection systems are safety equipment and, as such, need to be reliable. A 'safety' intended as a particular attention to the product as part of a system, hence the request for adequately certified products and a proven skilfulness in their installation and maintenance. This led to an increasing demand for reliability that in recent times generated the requests of SIL approved systems.

Total reliability and fail safe products have been our third decade commitment. Current improvements and developments are aimed at offering always more and more accurate sensors, reliable electronics and user friendly systems.



Sensitron third decade started along with obtaining GALILEO SMS control panels SIL 3 approval, a prestigious certificate that only a couple of our competitors can boast to have. This certificate enabled Sensitron to really rank amongst the market leading Companies.

These days a new hi-tech generation of gas detectors is being launched in the market to witness our ongoing commitment to safety and before the end of this year SIL2/3 SMART SMS gas detectors will also be available: detectors will have redundant electronics and sensing elements to provide simultaneous detection of gas by employing 2 independent sensors integrated in the same instrument.

Along with the above hi-tech products, it must be said that Sensitron has never disregarded the importance of designing innovative products dedicated to a more commercial market, where quality and cost effective prices represent a major selling key-point.

For years Sensitron has actively designed gas detection systems for car parks achieving a prominent market share: with no false modesty we can affirm that the majority of car parks in Southern Europe have been equipped with our systems, often supplied under the private label of worldwide multinational groups we manufacture for.

Since the new European Standard for car parks has been approved, we developed a tailor-made system where the Multiplexer MULTISCAN++ panel and the innovative SMART 3P can meet the EN requirements in full.

We invite all readers to contact us for any information they wish to receive on our products. **IFP**

For further enquiries please contact:
Sensitron srl
Website: www.sensitron.it

sensitron
GAS EVOLUTION
SAFETY AND SECURITY FOR A BETTER LIFE

SMART PARK SYSTEM

EN STANDARD & ONE MAN CALIBRATION
GAS DETECTION



MULTISCAN++

SMART 3P & SMART REPLACEABLE SENSITIVE HEAD

SMART 3P

SINGLE TECH:
CO - NO₂ - SO₂ - HC

DUAL TECH:
CO - NO₂

SENTOX IDE

sensitron
GAS EVOLUTION
SAFETY AND SECURITY FOR A BETTER LIFE

SMART 3G & (LISA) IR

ATEX & ONE MAN CALIBRATION
GAS DETECTORS



ATEX 100/1000

WITH IR TECHNOLOGY
AT THE PELLISTOR PRICE



sensitron
GAS EVOLUTION
SAFETY AND SECURITY FOR A BETTER LIFE

A YOUNG COMPANY WITH GREAT IDEAS
SENSITRON s.r.l. 20010 CORNAREDO (MI) - V.LE DELLA REPUBBLICA, 48 - ITALY - TEL. ++39 02.93548155 - FAX ++39 02.93548089
<http://www.sensitron.it> - e-mail: sales@sensitron.it - SOLE DISTRIBUTORS WORLDWIDE; OEM PRODUCTION AVAILABLE

FIRE RAY®

Optical Beam Smoke Detectors



- Low cost protection of large areas
- Easy Installation and low maintenance
- Worldwide approvals
- Over 600,000 installations worldwide
- Variety of models for all applications

A range of accessories are available:-



FIRE RAY® - The leading light in smoke detectors

Hotels around the world protected by FIRE RAY®



FIRE
FIGHTING
ENTERPRISES

9 Hunting Gate, Hitchin
Hertfordshire SG4 0TJ

T +44 (0) 1462 444740

F +44 (0) 1462 444789

E sales@ffeuk.com

W www.ffeuk.com

Cranford Controls™

– supplying to 25 countries worldwide

Cranford Controls™ was established in 1993 and is a family run business that specialises in the design and manufacture of sounders, beacons and ancillary devices for the fire, security and process control industries, supplying to 25 countries worldwide. Situated in Alton, Hampshire, we are conveniently located to London with main road and mainline rail connections.



Our company is based in a 13,000 square foot purpose built facility that is approved by LPCB and VdS to ISO9001:2000 (ISO9001:2008 by the end of this year.) Our factory features modern SMT line equipment and an anechoic chamber, allowing us to not only build and produce to a level of high quality but also to check and ensure that our sound output reflects this. Our commitment to this is echoed by continuing investment in our facilities.

Continued growth and an expanding customer base have led to the recent addition of offices to the upstairs of our facility, allowing for the old offices down stairs to be converted into a dedicated Research & Development department.

Our product portfolio features an extensive range, not only covering fire and security products but also power supplies, door accessories, intrinsically safe equipment, hazardous area and, most recently, Disability Discrimination Act (DDA) products.

Understanding the importance of DDA is a must for the future so at Cranford we are striving to emphasise the importance of this act to all our customers and to also help with compliancy wherever possible with our range of Spatial

Sounder/Beacons, Fireco Deafgard, Door Retainers and our newest introduction of a wireless disabled toilet alarm.

With our ever expanding range of products and dedicated sales and technical teams, we continue to offer a high level of choice and service to our customers through a highly experienced and focused distribution network.

We also offer a wide range of approved products which have been independently tested to the appropriate standards including EN54 by the LPCB and VdS and are CE marked to comply with the requirements of the Construction Products Directive (CPD). The approved products we offer include our VTG and VPR Spatial Sounders, our VSO Sounder Base, Power Supply Units and Call Points. On top of this, all of our Cranford Controls manufactured products are also RoHS and WEEE Compliant.

Here at Cranford Controls we pride ourselves on being a family owned and run, UK independent manufacturing company. This enables us to react to our customer's demands and focus on our tradition of providing quality products and excellent service to our customers through our committed team.

IFP

For further enquiries please contact:

Cranford Controls

Tel: +44 (0)1420 592 444

Website:

www.cranfordcontrols.com

Ship Halon Phase Out

GIELLETM
www.giellemarine.com

Retrofit with Gielle Clean agent fire
suppression systems

- Utilize existing piping
- 1 to 1 cylinder/nozzle replacement
- Existing Halon Systems / Existing HCFCs Systems
- Express service
- Worldwide 24h service
- Full range of International Approvals

Imo Halon Banking authorized
FP.1/Circ.37 - Jan 2009



Gielle / info@giellemarine.com



**The UK's Leading Independent
manufacturer of Quality Fire
and Security Products**



Made with Love

Cranford Controls have been manufacturing and developing high quality products since 1993.

With a strong Research and Development team we are able to fulfil the demands of our customers with new and exciting products.

All Cranford manufactured products are designed with quality, technology, ease of installation and aesthetics in mind. As a well established leading UK independent manufacturer we are proud to offer our extensive product portfolio to our ever increasing customer base throughout the UK and worldwide.

Each of our products are created and tested in our purpose built facility approved to ISO9001:2000 by LPCB and by VdS; our products also feature approvals including EN54, VdS, CPD and are RoHS and WEEE compliant.



Why not contact us
for more information on

T: +44 (0)1420 592 444

F: +44 (0)1420 592 445

www.cranfordcontrols.com



Best Products Best People

SPP sets standards
others try to follow

**The World Leader
in Listed Fire Pumps**



SPP is the worlds leading
manufacturer of fire pump packages.
For hotels, airports, warehouses, high-rise
developments through to complex oil and gas plants,
SPP has the listed fire pump product to suit the
demands of each application.

SPP Fire Protection Pumps:

- End Suction
- Split Case
- Vertical Turbine
- Multi Stage Multi Outlet
- Pump House Packages



WINNER
Manufacturer of the Year

**Pump Industry
Awards 2008**



Visit our website www.spppumps.com

Armstrong Launches Four New Fire Pumps

ARMSTRONG LIMITED, a leading supplier of quality high efficiency HVAC and fluid handling equipment for residential, commercial and industrial applications, is pleased to announce the release of four new Armstrong Fire Pumps. They are the 8x8x16 Vertical In-Line (VIL); 6x5x13 and 8x6x13 End Suction; and 12x8x18 Horizontal Split Case Fire Pumps.

The 8x8x16 Vertical In-Line Fire Pump enhances the existing Armstrong VIL Fire Pump product line and provides extended capabilities for flows of 1000 USgpm, 1250 USgpm and 1500 USgpm.

The 6x5x13 and 8x6x13

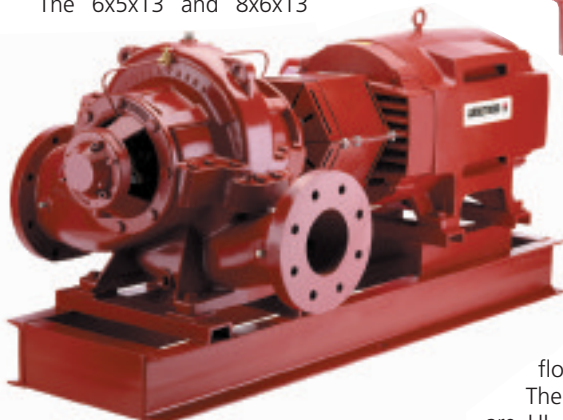


End suction Fire Pump

End Suction Fire Pumps offer improved efficiencies and extended capabilities for the ES Fire Pump product line, for flows ranging from 400 USgpm to 1750 USgpm.

The 12x8x18 Horizontal Split Case Fire Pump extends the HSC Fire Pump product line reaching flows as high as 3000 USgpm.

The four new Armstrong Fire Pumps are UL and ULC listed, and are also FM approved.



Horizontal split-case Fire Pump

For more information on Armstrong Fire Pumps, please visit our website at <http://www.armstrongpumps.com>

For more information, please contact:

Steven Lane
Communications Manager
Tel: 416-755-2298 ext. 367
Email: slane@armlink.com



VIL Fire Pump

Armstrong's Fire Pump Houses

ARMSTRONG LIMITED is expanding the availability of its fire pump house products. Previously, the product was only offered to the UK market, but now the fire pump house is available globally.

All components of the Armstrong fire pump house are built, wired, tested and packaged at an indoor Armstrong facility. By building the fire pump house in a controlled environment, the risks of equipment cost overruns, on-site errors, on-site construction delays and on-site worker injuries are eliminated.

All components are sourced, purchased and installed by Armstrong, which dramatically reduces the responsibilities and duties of the contractor. The fire pump house includes the following components:

- Fire pumps
- Electric motors
- Diesel engines (with accessories)
- Jockey pumps
- Controllers



- Required lighting, heating, sprinklers and ventilation system to meet international safety standards

The packaged fire pump house reduces on-site construction time by up to 93%. There is no

need to perform testing on-site, since the pumps are flow-tested and the entire system is pressure-tested before leaving the plant.

Installing the Armstrong fire pump house is a simple procedure and can be completed in as little as 4-8 hours. Once the fire pump house arrives on-site, all that is required of the contractor is to hook up the power connections, external suction and discharge.

There are several options that can be added to the fire pump house. A building owner or maintenance manager can be alerted to problems with the ArmCom7000 remote monitoring system. Other options available include door alarms, flowmeter loops and city bypass loops.

For more information, please contact:

Steven Lane
Communications Manager
Tel: 416-755-2298 ext. 367
Email: slane@armlink.com

Eaton – world class manufacturer of fire pump controllers



For more information,
please contact:
Eaton Corporation
Tel: +1-403-717-2000
Fax: +1-403-717-0567
Email: chcfirepump@eaton.com
Website: www.chfire.com

EATON
Powering Business Worldwide

The LMR Plus Series of Electric Fire Pump Controllers represent the next step in fire protection from EATON. These state of the art controllers are an enhanced version of the original microprocessor-based, LMR Series.

The DIESEL Plus Fire Pump Controllers are designed to control and monitor 12 or 24 volt, diesel fire pump engines and are among the most technically advanced diesel engine controllers available.



Firetrol® Fire Pump Controllers

Firetrol® Fire Pump Controllers are a brand of ASCO Power Technologies®, an Emerson Network Power® business.

As a leading manufacturer, FIRETROL's UL Listed, FM Approved products have long been trusted to protect the worlds' most high profile properties. Some of these include high rise buildings such as Burj Dubai, Taipei 101 and the Jin Mao Tower in Shanghai. Others include Yankee Stadium in New York, MGM City Center in Las Vegas and Macau's City of Dreams.

The Firetrol brand is also known worldwide in the oil and gas industry. We recently developed a UL Listed, Class 1, Division 2 Diesel Engine Fire Pump Controller to meet the unique requirements for this industry. This type of controller is used primarily in offshore platforms.

Firetrol's dedicated team of engineers, sales and service personnel have over 340 years of combined experience in the industry. We can provide the assistance and expertise to help make sure the right product is designed for your specific need.

For more information, please contact:
Firetrol Fire Pump Controllers
5625 Dillard Drive, Suite 117
Cary, North Carolina USA 27518
Tel: +1 919 460 5200
Fax: +1 919 460 5250
Website: www.firetrol.com



Firetrol®


EMERSON
Network Power

Industry's first variable speed electric fire pump controller from Master

Constant pressure regardless of suction variations

MASTER introduces the industry's first variable speed electric fire pump controller that adjusts the pump speed to maintain a truly constant output pressure from shut-off to rated flow. It even adjusts for large suction pressure variations without wasting a drop of water. They are UL listed and FM approved for fire protection in accordance with the latest edition of NFPA 20.

How it works

Since the output pressure of a centrifugal pump varies with the square of the speed, pressure can be controlled accurately by controlling the speed of the pump. For example, if a pump runs at 1785 RPM during shutoff with an output pressure of 204 PSI and the speed is reduced by 10 percent to 1607 RPM, the new output pressure will be 165 PSI. Since a constant output pressure is the desired outcome, one simply sets the desired pressure – say 165 PSI. The control system then varies the pump speed depending on the actual suction pressure and flow conditions to maintain a precise, constant pressure.

Technology – backed up by a traditional fire pump controller

Master ECV and ECVT variable speed controllers combine the reliability of the EC series fire pump controller with the high technology of a variable frequency drive into one robust package. By using an independent pressure switch that senses the system

pressure, the fire pump controller bypasses the drive if the pressure is not adequate. Therefore, the same high reliability is maintained as if the variable frequency drive were not even in the system.

To help protect the drive from lightning strikes, surges, and transients, a line side isolating contactor and a 5% line reactor is provided. The line reactor also helps to prevent harmonic electrical noise from going back into the power system. Further, power fuses are provided to take the drive off-line due to an internal fault without damaging or disabling the fire pump controller.

Tamperproof enclosure

The complete variable speed fire pump controller and drive is enclosed in a lockable, dusttight, NEMA 12 enclosure with a NEMA 12 external heat sink and NEMA 12 air-to-air cabinet cooler. This protects the high technology components from damage due to water spray, concrete dust, and physical tampering and eliminates the need for air conditioning.

Smooth hydraulic operation

Process controls dynamically regulate the motor speed and system pressure for smooth pressure adjustments due to changing flows or suction pressure variations. They also provide both Soft Starting and Soft Stopping to reduce or avoid start up water surges and shut down water hammer.



Standard alarms and remote contacts

In addition to the standard EC series alarms and contacts, model ECV or ECVT controllers provide visual alarms for "Drive Failure, Bypass and Overpressure" indication.

Huge cost savings in the right applications

- Eliminates the need for a break tank.
- Allows smaller pipe and better head

selection, and eliminates PRVs in ESFR systems.

- Reduces the use of high pressure fittings.
- Allows taller buildings without adding zones or may eliminate a zone.
- Eliminate system and floor PRVs and the annual testing.
- Eliminate or reduce the size of the drain riser.
- Eliminates wasteful dumping of water through the relief valve under no-flow conditions.

Emergency power applications

In the Variable Speed mode, the drive reduces the starting current to as little as 125% of the full load motor current while still producing rated torque. Thus, the ECVT works extremely well with all modern gen-sets.

In the Bypass mode, the motor will start Across-the-line. As an option, Master offers Primary Reactor or Soft Start reduced voltage starting to help reduce the gen-set size in this mode.

For more information, please contact: Master Control Systems

P.O. Box 276, 910 North Shore Drive
Lake Bluff, Illinois 60044-2295
Tel: 847-295-1010 Fax: 847-295-0704
Website: www.mastercontrols.com

Metron Eledyne Ltd type FD4e diesel engine fire pump controller

The new METRON ELEDYNE LTD type FD4e diesel engine fire pump controller is designed to specifically meet the latest NFPA 20, IEC62091 and UL 218 standards. It is FM Approved to class 1321/1322 and is UL listed.

This controller implements the latest component and microprocessor logic technology available and incorporates years of experience in the design and manufacture of fire pump control systems.

This latest version (v4) now has more indicators, user programs, volt free contacts and user inputs than ever before. It also has a multitude of other features which include, sequential stop timer, automatic stop timer, AC mains failure and shutdown in test mode all built in as standard. These additional features make this controller more versatile and more suitable to a variety of different applications. The controller is suitable for use as a standard NFPA20 basic industrial fire pump controller, or for a multi-channel off-shore oil and gas application.

The controller also has a fantastic data logging facility to ensure that the fire pro-



tection water pressure is constantly recorded and that all system events are recorded with a date and time stamp. All of these

data logs are accessed via a user friendly operator interface display, alternatively they can be transferred to a PC computer by a SD memory card for interrogation.

The enclosure can be NEMA 2, NEMA 4 or NEMA 4X and a special ATEX explosion proof version is also available.

The new FD4e controller is fully in compliance with RoHS and WEEE EC directives and is also CE Marked. It has also been exhaustively test to the latest EMC standards. The controller can also be arranged with identification labels in various languages from Russian to English.

Please visit our website:
www.metroneledyne.co.uk for more details



Patterson Pump Ireland offers new EN12845 Pump Range

PATTERSON PUMP IRELAND LIMITED has introduced an all-new EN12845 Pump Range specifically for the European market. This range features very competitively priced fire pump packages including new end suction pump models.

The company's housed and open-skid prepackaged fire pump systems continue to evolve and now utilize a bespoke modular building design. This design is unique to Patterson Pump whose innovative solutions for prepackaged pump houses are internationally recognized.

The new EN12845 Pump Range is a welcome addition to Patterson Pump Ireland's well-established ranges of NFPA No. 20 and FM/UL fire



pump products. It provides a greater selection of products, which combine the best in quality with a competitive price, keeping Patterson at the forefront of the fire protection industry.

Patterson Pump Limited also has launched its own range of Jockey/Booster Pumps, which reinforce the Patterson Pump Ireland brand identity and provide significant cost savings. All new projects will now include Jockey Pumps from this new range as standard.

Obtain full details on specifications, price and availability for any of these new pump ranges from your local Patterson Pump representative or by contacting Patterson Pump Limited's sales team directly at +353 44 47078 or via e-mail at info@ie.pattersonpumps.com

Global operating manufacturer



PENTAIR WATER is a Global operating manufacturer for sprinkler pumps.

With the Bands AURORA, FAIRBANKS and EDWARDS we offer a wide range of Splitcase-, Inline-, Endsuction- and Vertical Turbine Pumps as well as Foampumps.

Of course all pumps are built to the NFPA 20 and listed/approved by UL/FM.

For detailed information please contact:
Pentair Flow Technologies GBU
800 Airport Road, North Aurora, IL 60542, U.S.A.
Tel: +1 630-859-7000

or visit our webpages:

<http://www.aurorapump.com>

<http://www.fmpump.com>

<http://www.edwardsmfg.com>



**Pentair
Water**

SPP Fire Pumps – protecting people and property around the world

The protection of life is not a matter for compromise. This is particularly true for fire protection systems where they are only as strong as their 'weakest link' and compromise may result in avoidable loss of life or property.

That is why SPP FIRE PUMPS are designed specifically for the very particular needs of fire protection and comply with the demanding requirements of the LPCB, FM and UL approval standards and meet all the requirements of NFPA 20. This means that an independent assessment has been made of SPP's packages and processes and that they conform to industry standards.

The SPP range includes End Suction, Split Case and Multi Stage Multi Outlet pumps. In addition, experience gained from extreme environments such as off-shore oil & gas installations has led to the creation of the SPP Vertical Turbine range of pumps – the best technical solution for applications where the fire protection water source is located below ground or deck level. With this type of unit the impellers are fully immersed in the water ensuring the pumps are primed at all times.

The ultimate in tailor made fire protection pump packages are the SPP pump house packages – housing pumps, control systems and pipework. Individually engineered to customer requirements, and designed to FM/UL or NFPA fire protection rules, these packages are delivered complete



– installed in standard size containers ready for immediate installation on simple foundations.

You will find SPP products in major airports, oil & gas installations, in many of the tallest and most prestigious buildings around the world and in the channel tunnel between the UK and France. In fact, you will find SPP fire pumps wherever people and property need to be protected from the devastation of fire.

For more information, please contact:
SPP Pumps Limited
Tel: +44 (0)118 932 5289
Fax: +44 (0)118 932 3302
Email: clairecomber@spppumps.com
Website: www.spppumps.com



World Class Manufacturer of Fire Pump Controllers



LMR
PLUS



Diesel
PLUS



All EATON Diesel Plus Engine Controllers meet FM 1321/1323 requirements.

The LMR Plus Series of Electric Fire Pump Controllers represent the next step in fire protection from Eaton. These state of the art controllers are an enhanced version of the original microprocessor-based, LMR Series.

The DIESEL Plus Fire Pump Controllers are designed to control and monitor 12 or 24 volt, diesel fire pump engines and are among the most technically advanced diesel engine controllers available.

EATON

Powering Business Worldwide

EATON Corporation
10725-25th Street NE. #124
Calgary, Alberta
Canada T3N 0A4
tel: +1 403-717-2000
fax: +1 403-717-0567
email: chcfirepump@eaton.com
web: www.chfire.com

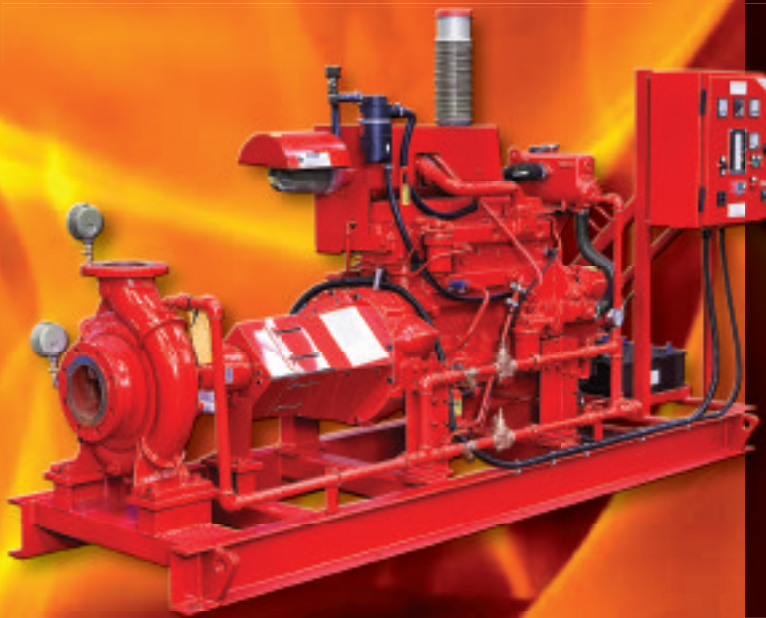
Introducing EN12845 FIRE PUMP LINE

Patterson Pump Ireland Ltd. specialises in the production of world class fire protection equipment around Europe.

From enquiry stage, right through design, manufacturing, installation and after sales service, Patterson Pump Ireland strives to provide a quality, reliable fire protection system, at the most competitive price.

EN12845 provides a pan-European standard for the design, installation and maintenance of automatic sprinkler systems, and encompasses the basic requirements set forth by local rules into one European Standard.

The new Patterson Pump End Suction product line is the latest addition to the Patterson Sentinel™ range. Cost effective and efficient, these will be used in fire pump packages specifically designed and built to comply with the regulations of European standard EN12845, along with other local rules.



PATTERSON PUMP IRELAND LIMITED

A Subsidiary of Patterson Pump Company U.S.A.
Unit 14, Mullingar Business Park • Mullingar, Co. Westmeath, Ireland
Tel.: 353 44 934 7078 • FAX: 353 44 934 7896
E-mail: info@ie.pattersonpumps.com

www.ie.pattersonpumps.com

Pumping Technology for Tomorrow's World
Patterson





Combines flexibility, reliability and ease-of-use

Bosch introduces fire panel 1200 series for small and medium-sized installations

- Proven panel concept provides highest operating reliability and safety
- Innovative fire protection in the one- and two-loop market segment
- LSN technology supports full range of proven LSN peripherals

Bosch Security Systems introduces a new fire panel series for small and medium-sized installations. Based on the company's proven high-end panel concept, the Fire Panel 1200 Series offers innovative fire protection in the one- and two-loop segments, combining flexibility and ease-of-use with the reliability of the market proven Modular Fire Panel Series.

The 1200 Series panel is operated via an easy-to-use touch screen featuring a large 5.7" LCD display and an intuitive user interface with a clear menu structure. In addition, the panel offers various diagnostic functions including the display of extensive diagnostic information.

Based on the LSN (Local SecurityNetwork) bus system, the Fire Panel 1200 Series offers the a high



for any application. The encapsulated modules are extremely rugged and are hot swappable, which means that it is possible to replace modules in a running system. The standard deployment of the 1200 Series panel is first loop. It can be easily extended to second loops with an additional module.

Moreover, up to three remote keypads can be connected to the 1200 Series panel. It is also possible to connect the panel to an FMS (Fire Monitoring System) and/or a BIS (Building Integration System) from Bosch.

As with Bosch's other fire-panel series, the 1200 Series panel operates with the new serial interface for

the Bosch EVAC Voice Alarm Systems.

This allows intelligent and more detailed evacuation control via the serial interface and reduces the number of relay output modules needed in multi-zone installations.

The Fire Panel 1200 Series is also certified according to all relevant standards, such as EN54-2 A1 and EN54-4 A2.

IFP

level of system stability, and supports the full range of proven LSN peripheral components. Furthermore, it provides synergies with the existing Modular Fire Panel family concerning specification, configuration, maintenance and logistics.

The 1200 series also offers an extensive choice of modules giving a broad range of possibilities

The 1200 series also offers an extensive choice of modules giving a broad range of possibilities for any application. The encapsulated modules are extremely rugged and are hot swappable, which means that it is possible to replace modules in a running system.



MEMBERSHIP



Up-To-Date? It's Up to You!

NFPA® membership is indispensable for more than 81,000 professionals worldwide. What about you? It's an easy decision for anyone involved with protecting people and property, because NFPA keeps members on top of breakthroughs, research, and technology...and in control of their careers. **Join now and SAVE 10%** on NFPA codes, products, and seminars, while **you stay up-to-date** with:

- **NFPA Journal®**, the award-winning bimonthly membership magazine loaded with articles, codes and standards information, investigations, case studies, and reports
- Answers to your code questions from NFPA's experienced fire protection specialists
- Online issues of **NFPA News** for codes and standards activities, and **NFPA Update** for training opportunities and events
- FREE membership in any of 16 industry-specific sections including Fire Service; Building Fire Safety Systems; Health Care; Electrical; and Architects, Engineers, and Building Officials
- The latest **NFPA Journal Buyers' Guide**—your bonus gift valued at \$40

Gain a decided advantage on the job. Join NFPA today!

Become part of the world's largest organization for fire, electrical, and building safety professionals and stay up-to-date for only \$150 annual dues—satisfaction guaranteed.

**To join call 1-617-770-3000, or visit
nfpacatalog.org.**

It's This Simple:

C6 Fluorosurfactants + C6 Foam Stabilizers

= BEST AR-AFFFs and AR-FFFPs

— “Best AR-AFFF and AR-FFFP Agents” meet the most stringent fire performance specifications with the lowest fluorochemical content. Fluorochemicals in “Best Agents” should neither be derived from nor degrade into PFOA or its higher homologs. In addition, “Best Agents” meet environmental requirements proposed by US and foreign regulatory agencies.

— ONLY Dynax offers a family of C6 Fluorosurfactants and C6 Foam Stabilizers for the production of low-viscosity 3x3, 1x3 and 1x1 AR-AFFF and AR-FFFP agents meeting “Best” environmental and fire performance requirements. The same applies to AFFF and FFFP agents derived from Dynax C6 Fluorosurfactants. All Dynax C6 Fluorochemicals are non-flammable and free of corrosive halide salts.

Dynax C6 Fluorosurfactants and Foam Stabilizers

Dynax Product	Ionic Type	Agent Application Guide			
		AFFF	AR-AFFF	FFFP	AR-FFFP
Fluorosurfactants					
DX1030	Anionic	●	●	—	—
DX1040	Anionic	●	●	—	—
DX1080	Nonionic	●	●	●	●
DX1090	Nonionic	●	●	●	●
DX1025*	Anionic	●	●	—	—
Foam Stabilizers					
DX5011	Anionic	—	●	—	●
DX5022	Anionic	—	●	—	●
DX5065**	Anionic	—	●	—	—
DX5066**	Anionic	—	●	—	●

* Blend of Fluorosurfactants ** Blend of Fluorosurfactants and Foam Stabilizers

US EPA PFOA Stewardship Program

By 2010: 95% Reduction of facility emissions and product content level of PFOA, precursor chemicals that can break down to PFOA and related higher homolog chemicals.

By 2015: Elimination of PFOA, PFOA precursors and related higher homologue chemicals from emission and products.

DYNAX CORPORATION

PO Box 285, Pound Ridge, NY 10576 USA

T 914 764 0202 techinfo@dynaxcorp.com

F 914 764 0553 www.dynaxcorp.com

dynax
FLUOROchemicals



Foams for Fixed Systems:

Fluorosurfactants add effectiveness



By **Tom Cortina**

Fire Fighting Foam Coalition (www.ffc.org)

and

David Owen

Firemain Engineering
(www.firemain.com)

The negative publicity surrounding 3M's phase out of PFOS-based fire fighting foams in 2002, and the subsequent speculation that telomer-based foams might also be regulated, has contributed to a shift in recent years in the types of fixed foam systems being installed in aircraft hangars, warehouses, and other similar applications. Now that environmental authorities have decided on a voluntary stewardship approach and telomer-based foams have not been regulated, it might be time to re-evaluate what are the best agents for use in fixed foam systems.

Overview of fixed foam systems

From foam-enhanced sprinklers to high expansion generators, foam is used in fixed systems to deal with a bewildering variety of fire scenarios. However, one thing that they all have in common – with very few exceptions – is that flammable liquids are the fuel source. And when dealing with flammable liquids, using foam that contains fluorosurfactants usually provides the highest level of fire suppression capability.

The science simplified: foam provides a barrier against flammable liquid vapors without aggressively mixing with the product and enhancing the volatility of fire from the fuel – water alone doesn't float on hydrocarbons and only serves to make matters worse. On the other hand, foam, especially when it contains fluorosurfactants, suppresses the burning vapor by forming an aqueous film on top of lighter fuels.

How we proportion the foam concentrate with water, and to what extent we expand it, is determined by the application. It is perhaps more informative to look at the applications first to help understand what choices there are to be made.

Foam enhanced sprinklers

Water is a fantastic firefighting medium, no question. However, sometimes it needs a little help when being delivered through sprinkler systems. Where a site has a large inventory of plastic material or where the storage medium itself is plastic, as in the case of

tote bins, adding foam into the sprinkler nozzles via a bladder tank gives enhanced fire control. This is classed as un aspirated foam. In other words, there is no mechanism built into the system for entraining air into the foam to give any expansion. Because the foam is only expanded to what might crudely be called a "milky effect," the foam concentrate itself needs to be aqueous film forming – AFFF.

Foam deluge systems

The difference between deluge and sprinklers, whether we use foam or not, is simply that in a deluge system a whole zone will actuate and apply water or foam to the hazard. The detection line is separate and controls the opening of a deluge valve to supply foam/water to the hazard. A range of detection options are available from simple air charged lines with detector bulbs through to triple spectrum UV/IR flame detection. Because deluge systems use open nozzles we have the option to aspirate the foam so that it becomes low expansion rather than un aspirated. This is achieved with the use of nozzles that entrain air and give an expansion ratio of up to 20:1 but typically lower. A relatively gentle application of aspirated foam is to be preferred where solvents in particular are stored. Process hazards are typically where deluge systems are to be found. Because these are low-expansion systems, they usually contain fluorosurfactant foam such as AFFF or FFFP.

Medium expansion pourers

Using the same methods of proportioning and foam storage, we can expand most of the commonly available foams up to 200:1. This provides a substantial foam blanket but with very limited throw from discharge devices. It's ideal where a gentle application is preferred and where spillage of flammables is contained. This is typically into bunds around tank farms and process areas where bunding is easily achieved whilst not hindering the means of escape. Medium expansion foam was particularly successful at the Buncefield incident for securing the bunds once the more volatile bund fires had been dealt with by monitors. Medium-expansion pourers can contain either non-fluorosurfactant detergent foam or fluorosurfactant foam such as AFFF or FFFP. Most of the foam used to secure the bunds during the Buncefield incident was fluorosurfactant foam.

High expansion foam

Along with foam-enhanced sprinklers, this is another application where class B fires are not the only limitation to its use. Expanding foam to anything up to 1000:1 means that we have a very light and relatively dry finished foam. One of the main applications for Hi Ex systems at present is the protection of aircraft hangars and warehouses. For aircraft hangars, NFPA allows a choice of options including Hi Ex, roof level low expansion AFFF deluge, and underwing monitor protection. In recent years Hi Ex has often been chosen in preference in part because of environmental concerns about fluorosurfactant foams and also because it produces far less firewater run-off, a significant issue when considering containment.

Despite these concerns, a recent report for the Canadian Department of National Defence recommended the use of overhead, closed head water sprinklers with low level, low expansion AFFF foam as the fire protection system of choice for aircraft hangars. According to the report, the proposed AFFF system scored the highest in both technical and cost evaluations, is very effective in asset fire protection with the AFFF agent utilized, has the ability to achieve rapid delivery and fire control, and is relatively simple to install and maintain as all foam components are located at low level.

Environmental update

Telomer-based foams do not contain or degrade into PFOS. They are not made with PFOA (perfluorooctane sulfonate), but may contain trace levels as a contaminant of the manufacturing process. Rather than regulate telomer-based products, environmental authorities such as the United States Environmental Protection Agency (EPA) have decided on a voluntary stewardship approach. Under the EPA's PFOA global stewardship program, telomer producers have committed to 95% reductions of PFOA, PFOA precursors, and related higher homologue chemicals by year-end 2010 and are working toward the elimination of these chemicals from both plant emissions and finished products by year-end 2015.

Members of the Fire Fighting Foam Coalition that make telomer-based fluorosurfactants and AFFF agents are in position to meet the goals of the global stewardship program before the 2015 target date with a family of all C6-based fluorosurfactants that provide the same fire protection characteristics with reduced environmental impacts. Incorporating these new fluorosurfactants will require some reformulation and likely some type of re-approval of most current AFFF, FFFP, and fluoroprotein foam products between 2010 and 2015.

A new study published recently by SFT related to fluorochemicals found at fire training facilities in Norway has drawn interest within the foam industry.

The SFT study confirms the findings of previous studies that the likely ultimate biodegradation products of the fluorosurfactants used in currently manufactured AFFF agents are persistent, but are not considered to be significant environmental toxins. The low bioaccumulation values developed in this study reinforce previous assertions of the general safety of these products. Because these studies were done at fire training areas where foams were released uncontrolled numerous times over many years, the findings should not be used to assess the impact of a one-time use of a fire-fighting foam to extinguish a fire, which would result in significantly smaller contaminant concentrations. Current accepted practice is to use fluorine-free training foams whenever possible as well as to collect and treat foam discharges when fluorine-containing foams are used for training or testing.

Conclusions

There are a number of different types of fixed foam systems that use both fluorosurfactant and non-fluorosurfactant foams. Although there has been a small but discernable trend in recent years towards the use of non-fluorosurfactant foams, this trend has been fueled in part by speculation that telomer-based fluorosurfactant foams would be regulated. Now that environmental authorities have decided on a voluntary stewardship approach and telomer-based foams have not been regulated, it might be time to be far less anxious about telomer based foams and to continue to use the AFFF agents that have provided such proven fire performance in fixed and mobile fire protection.

Fire fighting foam coalition

The Fire Fighting Foam Coalition, Inc. (FFFC) is a not-for-profit trade association whose members are manufacturers, distributors and users of aqueous film-forming foam (AFFF) fire fighting agents and their chemical components. The Coalition represents members' interests on all issues related to the environmental acceptability of fire fighting foams. FFFC also helps to ensure that accurate information about PFOS alternatives, including telomer-based products, is disseminated to appropriate audiences. The Coalition is a clearinghouse for information, supports the development of industry positions, and interacts on behalf of members with relevant government organizations.

FFFC has provided extensive information on AFFF to environmental agencies in the United States, Europe, and Canada that includes the following:

- Amount of fluorosurfactant actives used in the manufacture of AFFF in the United States
- Chemical structure of the fluorosurfactants used in major fluorotelomer-based AFFF formulations
- Mechanics of film formation
- Groundwater monitoring data from US military fire training areas
- US Inventory of PFOS-based and fluorotelomer-based AFFF
- Overview of the different types of foams, the market channel for their distribution, and the environmental fate once they are used
- Aquatic toxicity of fire fighting foams

The following companies are represented on the Board of Directors of FFFC: Ansul (Tyco), Chemguard, DuPont, Dynax, and Kidde (UTC). All of us believe strongly in the value of our products and their potential for fighting fires quickly and safely. Our products have been proven to provide knock-down, resist burnback and secure the enflamed area in flammable liquid – or class B – fires. From aircraft fires to major flammable liquid spills, our products have provided quicker, more effective results with less risk to firefighters, less property damage and reduced environmental impact.

**You can rely on
Dr Sthamer – Hamburg
For all your foam needs
AFFF, AR-AFFF
Training Foams
Fluorine Free Foam**

FOAM FIGHTS FIRE

Proven Reliability.

**24/7 Emergency Supplies
From Stock**

Synthetic Foams

- Moussol APS
- Moussol FF **NEW!**
- Sthamex AFFF
- Sthamex
- Sthamex class A

Protein Foams

- Fluor-Foamousse
- Foamousse FFFP
- Foamousse OMEGA
- Foamousse

Ready To Use Foams

- Fettex
- Mousseal-C
- Mousseal-CF
- Mousseal-ATC

Training Foams

24/7

**EMERGENCY
SUPPLIES**

+49 40 736 16 80

We offer a comprehensive range of high performance and environmentally friendly foams.



Dr. STHAMER HAMBURG

Head Office and Factory Hamburg
Liebigstrasse 5 · D-22113 Hamburg
Phone: +49 40 736168-0
Telefax: +49 40 736168-60
E-Mail: info@sthamer.com · www.sthamer.com

International Sales Contact
Mr. Jan Knappert
Phone: +44 (0) 7795 101770
E-mail: jknappert@sthamer.com



We Know Fire!

Your Solution for Fire Resisting Glass

A complete range for
all Fire Resisting
Glass classifications!



E = Integrity

Provides a physical barrier against
flame, hot toxic gases and smoke

SGG PYROSWISS[®],

SGG PYROSWISS[®] Extra

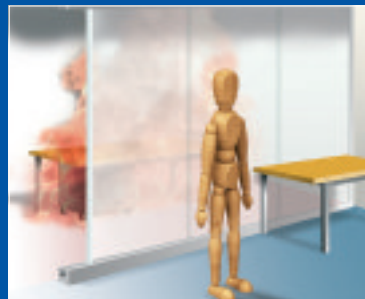


EW = Radiation

Control of the transmission
of radiated heat below
a specified level

SGG VETROFLAM[®],

SGG CONTRAFLAM[®] Lite



EI = Insulation

Highest performance limitation
of surface temperature on the
unexposed side

SGG CONTRAFLAM[®], SGG SWISSFLAM[®]



Progress with fire-resistant glass

Limiting risk, reducing uncertainty

Glass is such a common and familiar material in today's architecture that there is a risk that too much is taken for granted concerning its behaviour in fire. Glass architecture and design practice continue to advance by leaps and bounds; each new iconic building that goes up seems to lead with another structural innovation. Fire-resistant glass, and the understanding of glass in fire, have also advanced in parallel, influenced by the trend to open building design in the shadow of the threat from fire to an increasingly complex congested built environment. It is important that those advances are given full recognition.

By Mike Wood

Pilkington Group Ltd

Myth and mystique

Some assumptions are simply not justified given the fundamental nature of glass. For example, higher impact strength (e.g. as toughened glass) is sometimes implicitly taken generically to mean strength in fire. Not so – the two are different and governed by entirely different factors. Equally, standard annealed glass and double glazed units are too often erroneously assumed to provide an acceptable degree of resilience. Single glazing easily cracks in fire and a double glazed unit shows consistent integrity failure in tests after only a few minutes exposure. A too literal interpretation of the terms “safety and security” applied to glass products may also lead to misconceptions. Products in this category, for

example laminates based on plastic organic interlayers, fail catastrophically in fire after glass cracking followed by smoking, with dripping of the hot liquid interlayer and flaming.

Glass is not a material with inherent resilience against fire. To have any practical and significant fire resistance, especially against various fire scenarios, requires a special and robust fire-resistant technology.

Regulations

Countries the world over recognise the importance of making provision for fire safety in their country regulations governing buildings, design, and construction. Some may have well established regulations over more than fifty years, others may



only just be developing up-to-date guidance. In all cases, the applicable regulations are influenced by local tradition, custom and practice, stimulated in particular by significant landmark fire events.

The ways of making fire safety provisions, and the recommended guidance, varies, but the underpinning principles remain the same. The first priority is safety of the occupants and sure protection for firefighters. Second comes protection of the property and assets, an increasing need since fire can have tremendous economic impact on local communities, through its affect on jobs, businesses and public buildings such as hospitals, residential homes for the elderly, and schools. Fire does not only have a human dimension. There are economic, social, and environmental aspects as well. There are good reasons for wanting good fire safety regulation, and especially appropriate enforcement.

Specifying fire resistance

Given the complexities of fire and the various possible fire safety objectives, it is not sufficient to simply specify “fire resistance”. Fire resistance has to be defined. Standards commonly recognise two basic classifications, which for any qualifying product must be checked by test in a specified fire-resistant system. These categories are a) integrity, i.e. acting merely as a physical barrier to simply hold back flames and hot gases, and b) insulation, which requires integrity plus the ability to prevent significant heat transfer from the fire and flames (by all mechanisms: radiation, conduction, convection).

Similarly, the general term “fire protection” can also cause confusion and misconception, especially between fire resistance and fire retardancy. The fire retardant property applies entirely separately to spread of flame and the ability of a material to sustain burning.

Intermediate fire resistance options may also only serve to blur distinctions. An example is the European class EW which allows classification up to a measured radiant heat level of 15kW/sqm at 1 metre distance. Only one country in Europe uses this class in its regulations. In fact 15kW/sqm is a high level of radiant heat – readily understandable if it is remembered as being equivalent to around 15 times the maximum sun’s intensity at mid summer on the earth’s surface, capable of causing serious burns in a fraction of minutes. The limit to protect people is 2.5 kW/sqm, i.e. insulation performance.

One of the reasons for the 15 kW/sqm provision in the classification scheme is a presumption that this generally limits the risk of ignition on the non-fire side. This may be the case for some materials, but not necessarily all. But what the 15 kW/sqm level hardly limits is the risk of smouldering combustion on the non fire side (without flaming), generating smoke in the protected zone. And it is smoke and fumes which cause many deaths in fire.

Critical importance of insulation

Because heat is one of the most dangerous aspects of fire, integrity with limited or no ability

to attenuate heat has restricted application. That is, for example, before the fire conditions become untenable, i.e. in the early stages of escape within the first minutes of the fire alarm being sounded, or for smoke screens in the absence of flames.

In contrast, insulation plus integrity has the ability to provide far more robust fire protection over time, also providing excellent protection against heat which may otherwise cause serious life-threatening burns. Insulation performance may therefore offer particular advantages for enhanced life safety (especially for vulnerable groups) as well as benefits in limiting fire spread by secondary ignition on the protected side of the glazing.

Confidence in performance

One of the most important questions facing specifiers and designers concerning fire is product reliability. Does the product performance in a test reflect likely performance in a fire? Does a pass in one test mean a pass should the test be repeated? Does an individual furnace test reflect routine production quality, or is it a special quality?

The main purpose of testing is to allow product classification. The test is formulated to represent a standard, fixed fire condition. Yet in practice there is no "standard" fire: fire is essentially unpredictable and variable with infinite capacity to surprise. Chance circumstance may determine outcome in a way that cannot be foreseen at design.

A single fire test, it should be remembered, only provides information on the system as provided and tested on the day of the test, as installed on that day. Installations should replicate the original tested specification. A single test simply allows classification, and only provides an indication of tendency. Important considerations that allow better judgment on risks in real fires are not recorded nor offered, for example a description of the change mechanism under fire exposure. If wider assurance and confidence in the level of performance is sought then the wider picture needs to be obtained. That evaluation should include the fundamental characteristics of the particular fire-resistant glass technology being used.

Pointers to reliability

The first point of reference is the test record – not only the extent of testing and success rate, but also if test failures are experienced and why. The range and number of test approvals is a significant guide: different applications and situations, number of framing options, the complexity of the glazing arrays, and the size of the glazing panels tested are all useful indicators. It is valid to ask how many approvals have been gained, in how many different test laboratories under different testing regimes, as well as the number, range and variety of systems that have successfully gained official test approval. Additional product certification – e.g. international and national marks, such as CE marking, UL approval, and third party schemes – are also useful indicators.

It's the responsibility of manufacturers to take all measures that they can to check the fitness for purpose of their products. A basically sound and robust fire-resistant glass technology is needed, that can respond in real fire situations to the unpredictable challenges set by fire. Not all fire-resistant glass technologies may measure up to

this criterion. Internal checks and control processes are also important.

The governing attitude should be "test, test and test again," not only in official tests but also by the discipline of internal furnace testing and product control. For example, Pilkington operates four full size furnace test facilities in regular use, with facility to evaluate both oil and gas firing, including the capability to test elements up to size 4m by 4m.

Natural selection

One of the most important considerations in evaluating risk in a fire is to understand the mode and mechanism of failure under fire exposure. The necessary level of confidence in a product can only come from a good pedigree of furnace testing, as diverse and varied as possible, together with an open explanation of the mechanism of deterioration in fire together with explanation of the fundamental strengths of the technology that counterbalance that mechanism. For example, there is a world of difference between catastrophic, unpredictable failure (which is essentially an unreliable failure mode, e.g. as characteristic of toughened glass in fire), and one that is based on gradual and progressive deterioration, which is predictable and therefore controllable through product design (e.g. as applies to intumescent sodium silicate based laminated fire-resistant technology, as used and extensively tested over many years in the first of this type Pilkington **Pyrostop®** and Pilkington **Pyrodur®**).

All materials, sooner or later, fail in fire. The product that recognises that, and adjusts accordingly in its underlying technology and design, is the one that provides the natural choice for security and peace of mind.





Range of application

The use of fire-resistant glass is now extensive, providing plenty of options. Interior applications include vision panels, full glass doors and doorsets, large area glazed partitions or separating walls, and privacy glazing with integral blind systems. Even some fire-resistant glazed sliding door systems are available. For the older heritage building, secondary fire-resistant glazing systems may be appropriate to provide the fire protection function whilst preserving the character of the original casements. The widespread use of atria in designs has also led to some interesting fire-resistant solutions, especially in the side glazing for major atria to prevent fire break out from the adjoining rooms looking out into the atrium. The latest innovation is integral load-bearing fire-resistant glass floors in one composite structure – which critically require insulation fire-resistant glass to limit heat transfer into the structure and preserve structural stability.

External applications include not only the vertical façade elements to minimise the risk of fire transfer to adjacent buildings or escape ways, but also composite overhead glazings for horizontal or inclined roof applications to allow the maximum light penetration into the building, also fulfilling the safety requirements for overhead. The designer now has many available options to realise innovative and open design without compromising fire safety (whilst providing other critical functions such as energy efficiency, security and acoustic comfort). One of the most important and growing applications is the use of external fire-resistant glazing to prevent fire movement outside the building, since break out followed by break in on adjacent levels is especially one of the most sensitive fire risks for the tall and complex buildings that now dominate city skylines.

The future: risk and intelligent design

The risk-based approach to fire safety design is becoming more popular as an alternative to prescription. Complex and individual building designs call for fire safety design tailored to suit the building's occupancy profile, performance specification and layout. If prescriptive regulatory

guidance is to be sidelined more and more by expert judgment and functional design then it is even more critical that products and technologies are clearly understood.

Fire-resistant glass cannot be treated generically. And relying just on a single fire test, or a limited range, is not enough. Each fire-resistant glass needs to be evaluated on its own merits. Risk can only be properly evaluated, and related to real fire conditions, if the failure mode is taken into account in specification decision making. That means using a robust and resilient fire-resistant glass technology, one that has an inherently reliable and repeatable function. If seeking to limit risk and minimise uncertainty in real fires is the way forward, then there needs to be a greater focus on behaviour under real fire conditions and less of a tendency to take products just at face value.

IFP



'Shine and sign'

– Jargon with possible deadly consequences!!



By Wilf Butcher

Every trade has its jargon and as a fire protection linguist I thought that I had come across most of the polite (and rude!) phrases by now. Indeed my internet fire protection translator is peopled with temporary files that contain the most wonderful examples of literary excess, for example did you know that a 'A Big Yellow McLeod' in the USA is a bulldozer working on a fire, while in Australia a 'Sponcom' is a fire from gas issuing from a mining operation?

But closer to home while talking to an FIA member on the 'phone the other week he repeatedly said that he was losing business to people that 'shine and sign'. In North America 'shining and signing' describes the process where celebrities show up to a convention or at a book launch to radiate their personalities and then to sign autographs. Now try as I might I could not see how this process related to the servicing of portable fire extinguishers in the northeast of England. I guess you do get radiant heat from a fire but I've never yet seen a conflagration place its signature into a small notebook!

Not wanting to show my ignorance I let this comment go several times and then felt that I had no alternative but to ask him to explain the term. My telephone friend then patiently explained to me that 'shine and sign' refers to those unscrupulous fire protection maintenance companies whose operatives believe that the servicing of a fire extinguisher involves the removal of a yellow duster from their bag to be followed by a biro. The former is used to wipe the dust off of the extinguisher while the latter is used to sign the appropriate paperwork as evidence that the proper level of servicing has been carried out.

I will not bore you with detail but to 'shine and sign' misses out 99.999999% of the British Standard which deals with portable fire extinguisher maintenance!

So how do these 'shiners and signers' get away with it? Well they trade upon the ignorance of the customer hoping that they will never be caught, a risky business when you consider that a fire extinguisher is a pressure vessel that could seriously injure its operator in the event of a malfunction that could have been brought on flawed or lacking maintenance procedures. But do they care? Of course not, they have little or no regard for peoples' safety or to the standard of business ethics that goes with the operation of a proper business.

Unfortunately the 'shiner and signer' in portable fire extinguisher maintenance has his/her peers in other parts of the fire protection industry. Indeed there are incompetent people in all walks of life as are there people that will defraud their customers by knowingly providing a deficient service and/or product.

So how do you remove the risk of inadvertently having a 'signer and shiner' or his/her peer carry

out work for you on your premises? Well simply put you should ask that anybody that designs, installs or maintains fire protection equipment prove their competence. Indeed under UK fire legislation all fire protection provided will be subject to maintenance and will be installed and maintained by a 'competent person'. A person is to be regarded as competent where he/she has sufficient training and experience or knowledge and other qualities to enable him/her properly to assist in undertaking the preventive and protective measures.

For the UK's commercial buildings fire legislation places the onus of the fire safety in buildings on the shoulders of the Responsible Person and the main enforcing body will be the local fire and rescue authority. Thus the Responsible Person should make sure that the people that work upon the fire protection measures in his/her building should be competent or the wrath or worse of the local fire and rescue authority will be incurred.

How may this competence be ascertained? Well a good start would be to ask the person in question to provide evidence with regard to their competency in the form of attendance at a relevant training course and/or membership of an appropriate competency scheme. If they can't provide this then contact should be made with their employer and the same questions asked of them. This process will at least make the employer think about the needs of the end user and should scare off any 'signers and shiners'!

I'm looking forward to learning more new terms in the fire industry, my hope being that they not deal with the bad parts of the business but with its ability to 'leverage best practice' so that the 'low hanging fruit' of 'continuous professional development' may be enjoyed by all – now that's certainly enough jargon for one day!

IFP



International Water Mist Conference 2009

23 - 24 September, 2009

London, United Kingdom

The 9th International Water Mist Conference is presented by the



in conjunction with independent member institutions

Please see

www.iwma.net

for more information

The conference includes a site visit on the second day at the Building
Research Establishment (BRE) with real fire demonstrations

Registration

Name _____ First Name _____

Organization Address _____

Tel.: _____ Fax: _____ E-mail: _____

Payment received on or before 26 June

Payment received after 26 June

On-Site Registration

Members 460 Euro

Members 520 Euro

Members 540 Euro

Non-Members 520 Euro

Non-Members 580 Euro

Non-Members 600 Euro

☐ Bank transfer

☐ Credit Card*

*Payment by credit card available for attendees outside Europe through PayPal

Date _____ Signature _____

Fax or mail this registration form to: International Water Mist Association, Biederitzer Str. 5, D-39175 Heyrothsberge, Germany,
or register online at www.iwma.net

Phone +49 - 392 92 - 690 25

Fax +49 - 392 92 - 690 26

E-mail info@iwma.net

*Spraying water mist
nozzle on a ship*



Need for full scale fire testing

The International Water Mist Association has recently published a position paper and addressed the reservations by IWMA if the design of water mist systems is based on computer simulations only.

Ragnar Wighus

On behalf of IWMA

The topic was discussed in IFP earlier in the year and the need for full scale fire testing in order to reach the necessary level of knowledge and expertise before a water mist system should be installed for certain applications was emphasized. In the ideal case – if test protocols are available – the tests should result in official approval, with testing witnessed by an authority having jurisdiction.

The crucial point is that obtained test results for specific applications or specific enclosure volumes can not automatically be applied to different scenarios. The result would be either supported by additional fire testing for bigger enclosure volumes or one is able to generate a formula that tells us which parameters of the systems have to be adjusted if the enclosure volume for example is doubled.

Therefore, one of the important questions in the future will be if and how scaling rules can be applied to water mist systems. Scaling rules will not be able to replace full scale fire tests. However, scaling rules – based on the investigation of real fire test data – could help to reduce the cost for testing and, therefore, the overall system costs to some extent.

Background

The International Maritime Organization has addressed the subject during one of its Fire Protec-

tion Subcommittee meetings. If an appropriate scaling rule can be found for machinery spaces on ships the approved enclosure volume could be enlarged. The discussion last year was postponed due to the lack of sufficient data and IWMA offered to carry out a research program on this subject with the aim to document the possibility to scale the effects of water mist into larger volumes. The existence of a significant set of data for fire tests carried out in smaller and bigger machinery spaces enabled IWMA to begin with the analysis. The objective has been to develop a scaling rule that is verified by the test data set.

Physical scaling

Scaling of the effect of a water mist system from one volume to another can be carried out by physical scaling rules, keeping non-dimensional characteristics numbers constant. The main scaling scheme used in fire modeling is Froude Number Modeling (see reference 3). If Froude Number is preserved at different scales, the development of temperature and gas species will be similar in space, with a defined time scale. This approach can be utilized when predicting the temperature development inside a compartment, knowing the fire size. Froude Number Modeling is basically a simplification.

When scaling one test fire into a larger

Fire Test set up for machinery spaces with mock-up according to the IMO test protocol



compartment, different approaches can be taken. Keeping the same fire size and increasing the volume will for example influence the time scale of the temperature in the volume. On the contrary, to keep similar time scale for the conditions inside an enclosure, the fire size has to be scaled with the length scale. All dimensions of a compartment are to be included in physical scaling.

The ceiling height, however, is supposed to be constant in this case. The IMO regulations allow at present for scaling up to twice the volume, in case scientifically based scaling rules are accepted by the organization, by keeping the ceiling height constant. This is not in line with Froude Number Scaling, and leaves a challenge to physical scaling.

Analysis of test results

The current test protocol IMO 1165 includes a large variety of fire scenarios. Larger and smaller fires, spray and pool fires as well as shielded fires are part of the test program. The test fires have to be extinguished within 15 min. For the purpose of qualifying the scaling scheme, manufacturers of water mist systems have provided test results from such tests. Finally, a total of 105 tests have been utilized for the investigation. Both low-pressure and high-pressure systems are presented in the database for comparison.

It was found during the analysis that the time scale based on Froude Number Similarity is valid for the time history of temperatures and concentrations of species inside the room. Increasing the room size by keeping the same fire size, as it is done in the test series leads to a slower temperature rise inside the room, and possibly also in the objects inside the room.

It is clearly seen that the temperature increases more rapidly in the smaller room than in the larger. In several cases the peak temperature measured at high levels are significantly higher when the water mist system is activated in the smaller room.

The analysis of the tests with mock-up revealed that the heat up of the mock-up at the measured positions, one at the side facing the concealed spray fire, and one at the pipe at the top of the mock-up, are moderate in both room sizes. The temperature increase in the larger room is higher for the thermocouple on the side facing the concealed spray and the pool fire on the bilge plate, indicating that the fire is continuing longer

in the larger room. This is also reflecting the longer time to extinguish.

If the horizontal room size is doubled by keeping the ceiling height and the fire sizes constant, the main tendency will be that the reservoir of fresh air is more than doubled (water application rate is doubled as well). This will lead to a longer time before the oxygen depletion inside the room will occur. If distance from doorway to the test fires is kept constant, the influence of the fresh air supply from the doorway will be approximately similar, only differing by the reduced flow of air due to possible less temperature difference between upper and lower part of the enclosure.

At true time from the start, temperature inside the enclosure will be lower at locations away from the fire source, as the combustion products will dilute into larger volume. Gas concentrations and the concentration of smoke particles will follow the pattern of temperature. The concentration of oxygen will then be higher.

With respect to the door opening of 2 x 2 m in the test, the current test procedures in IMO Circ. 1165 allow water mist nozzles to be positioned in an overhead position only, and the room is equipped with this door opening. This has been considered as a safety factor. The door opening can also be seen to represent additional air from an increased room volume. In this case, the real installed water mist systems have already been tested in a larger room volume. In a case where the door opening is closed, one should expect that time to extinguishment is decreased in comparison with the test cases.

Another safety factor to installed water mist systems is the required duration of fresh water supply, 30 minutes. This is twice the maximum required time for extinguishing the test fires.

Conclusion

IWMA recommends that the International Maritime Organization allows the installation of a system in an enclosure of twice the volume for which the water mist system was tested for, based on Froude Number similarity and the test results provided by IWMA. These results are valid for low- and high-pressure water mist systems. The ceiling height is considered to be unchanged. To compensate for a possible longer duration of small remaining fires in obstructed places, it is suggested that the duration of water supply is increased to 45 minutes in the case of twice the room size.

The results of the research work were presented during the last Fire Protection Subcommittee meeting in London, will be considered during the next meeting in early 2010 and are available for interested parties. The detailed report of the work can be requested by contacting the IWMA office.

IFP

References

- 1 Ragnar Wighus: Scaling of Fire Suppression Characteristics in Machinery Spaces. 8. International Water Mist Conference, Copenhagen, 17–18 September 2008
- 2 Ragnar Wighus: Scaling of Fire Suppression Characteristics in Machinery Spaces – Report, March 2009
- 3 Hong-Zeng (Bert) Yu: Experimental Evaluation of Froude-Modeling-Based Scaling Relationships for Water Mist Suppression of Enclosure Fires. 8. International Water Mist Conference, Copenhagen, 17–18 September 2008

International Water Mist Conference 2009

The forthcoming International Water Mist Conference 2009 will take place this year in London, United Kingdom, from September 23–24.

The conference is open to anybody and will be an excellent opportunity for those responsible for selecting fire protection to extend the knowledge about water mist technology.

The conference will be held partly at the London Hilton Paddington Hotel and the Building Research Establishment (BRE). Full scale fire demonstrations will give particularly newcomers the possibility to see water mist systems in action. Interested parties can find more information about the conference such as the program on the web page of IWMA www.iwma.net



Efficient Fire Fighting with high pressure water mist

The Sem-Safe® system provides optimal protection while being environmentally friendly, harmless to users, and with far less impact on buildings and interiors than traditional systems. This result in significantly reduced lifecycle costs, asset damage and operational downtime in all 'business critical' applications, and thereby offer a greatly enhanced cost/benefit ratio.

*Sem-Safe®
– the unique high-pressure water mist system
from Danfoss Semco*

www.danfoss-semco.com

Fire...3...2...1...0



MINIMAX

Minimax is one of Europe's leading suppliers of fire extinguishing systems.

Powder-based systems are installed on fire engines, ships and other vehicles. They are the heart of these units and are used as mobile fire extinguishers for example on airports, in the oil industry and in situations where the use of water-based solutions is not safe.

Whether fire extinguishing systems or body components are concerned: Minimax provides a varied program for fire extinguishing and emergency vehicles.

Customized solutions are one of our strengths and advantages:

- Single powder units from 50 to 3000 kg
- Twin units up to 6000 kg
- Permanent and high pressure technology
- CO₂ units from 60 to 480 kg
- Individual configurations

Thanks to our experience we have sold more than several thousands of systems worldwide and became the specialists for powder and CO₂ extinguishing systems.

Minimax Mobile Services GmbH & Co. KG
Minimaxstr. 1 · D-72574 Bad Urach · GERMANY
Telephone +49 (0) 7154 154-133
Telefax +49 (0) 7154 154-166
FunkR@minimax.de · www.minimax.de

All you need to kn

In this special 'profile' feature International Fire Protection tells you everything you need to know about BASEC. What does the organisation do and why should you have BASEC approved cabling?



By Jeremy Hodge

CE

The British Approvals Service for Cables (BASEC) is a recognised sign of assurance of independent cable testing and approval.

A non-profit making Government-nominated body, BASEC has for more than 30 years been a mark of reassurance to those specifying cable.

A leader in product certification services for electrical cables, data and signal cables and ancillary products, BASEC has a reputation for quality, clarity and ensuring safety in cables.

All products are rigorously tested to meet necessary and appropriate British, European and international standards through detailed examination of manufacturers' production processes and controls, and regular product testing.

As outlined below, BASEC offers a wide range of services in product approvals and certification, systems assessment and certification, auditing for process capability in cable making and independent testing and reporting in the event of disputes.

Product approvals – manufacturers submit each cable type put forward for BASEC approval for a full range of tests to check the products comply with national and international standards. Only after BASEC has also verified that a cable manufacturer has the facilities, processes and the capability to make good cable is a license awarded, permitting the manufacturer to display the BASEC mark on their products. Each approved cable is then regularly retested by BASEC to ensure ongoing conformity.

Systems assessment and certification – here BASEC operates individual or integrated management system assessment schemes, leading to the company issuing management systems certification. The BASEC schemes are designed to assess an organisation's general ability to produce goods and services consistently to specification and customer requirements, in a safe manner and with due regard to environmental needs.

They include:

- *Quality management systems to ISO 9001*
- *Environmental management systems to ISO 14001*
- *Health & Safety management systems to OHSAS 18001*

Audits where more than one of these is employed may be conducted individually or on an integrated basis.

Certificate of Assessed Design – BASEC offers a Certificate of Assessed Design for new concepts where no national or international standard yet exists. In this instance a manufacturer's or user's/other specification may be used as the baseline specification, which BASEC may review to ensure that current industry requirements, e.g. particular test methods, are incorporated as appropriate.

Independent testing and reporting in the event



of disputes – this enables an interested party to have a cable independently tested. This service allows reports to be issued regarding a cable and its conformity to a specification, but no right to use a BASEC mark is awarded. Forensic investigation can often assist in cases of cable failure or for product selection.

BASEC approves to many national and international cable standards

BASEC offers product approval to a wide variety of cable standards, and also offers bespoke approvals for products where standards do not yet exist.

The main group of standards BASEC approves to are British cable standards. These include BS 6004, BS 6231, BS 6500, BS 7211, BS 5467, BS 6724, BS 6622, BS 7629-1, BS 5839-1 and many others.

BASEC also offers approval to European (CENELEC, harmonized) standards, to international (IEC) standards, and to sector standards (e.g. TIA). BASEC can also approve to other national standards, such as Irish, Malaysian, etc. BASEC is a member of the HAR scheme for harmonized cables made in Europe.

All BASEC approvals follow the same approach. Each approved product is subject to a high level of product testing, manufacturing assessment and ongoing surveillance, in accordance with BASEC's scheme rules and regulations.

Who tests the cables?

BASEC employs a number of laboratories to conduct testing of cables, to ensure the products sent to us undergo fully independent test procedures using the latest equipment and technology.

In support of this, the BASEC's assessors make visits to clients and prospective clients' manufacturing plants to monitor the whole process. Only by checking processes at first hand can we

Now about BASEC

ensure that systems are inherently reaching relevant standards.

It is also possible for BASEC assessors to witness testing at manufacturers' premises where suitable facilities are available.

BASEC's assessors are highly skilled, experienced engineers and auditors who possess extensive in-depth commercial and industrial knowledge.

They have a reputation for being highly professional and rigorous and are responsible for approving BASEC's highly respected certification. They need to be fully aware of the latest standards and test criteria and what they mean in the UK, across Europe and worldwide.

Only cable marked with the "BASEC" name is BASEC approved

It is a common misunderstanding that a cable is compliant with standards or even BASEC approved just because the supplier claims that it has been produced to a particular standard.

Cable marked with only a standard number should be treated with caution. It is probable that nobody independent of the manufacturer has examined that cable, and the claims made may be unreliable. Only cable marked with the "BASEC" name is BASEC approved, by demonstrating its compliance to the required standards.

**The British Standards
Institution (BSI) is the body
which co-ordinates the writing
of standards for cables and
other electrical and electronic
systems in the UK.**

Cable standards not only specify the dimensions and materials of a cable, they also require that a range of specific tests are undertaken to prove the construction and performance. Many non-approved cables have not been subject to the required tests.

What's the difference between BASEC and BSI?

The British Standards Institution (BSI) is the body which co-ordinates the writing of standards for cables and other electrical and electronic systems in the UK. BASEC works closely with BSI's cable committees in the development of standards.

For example, it is responsible for drawing up a standard for a specific reason, say to ensure a cable meets certain fire performance criteria and how it needs to perform in the event of a real fire.

Assessors from BASEC will then ensure that the cables which manufacturers would like to be approved as meeting that standard do, in fact, achieve the standards' criteria through testing the product and the manufacturing process.

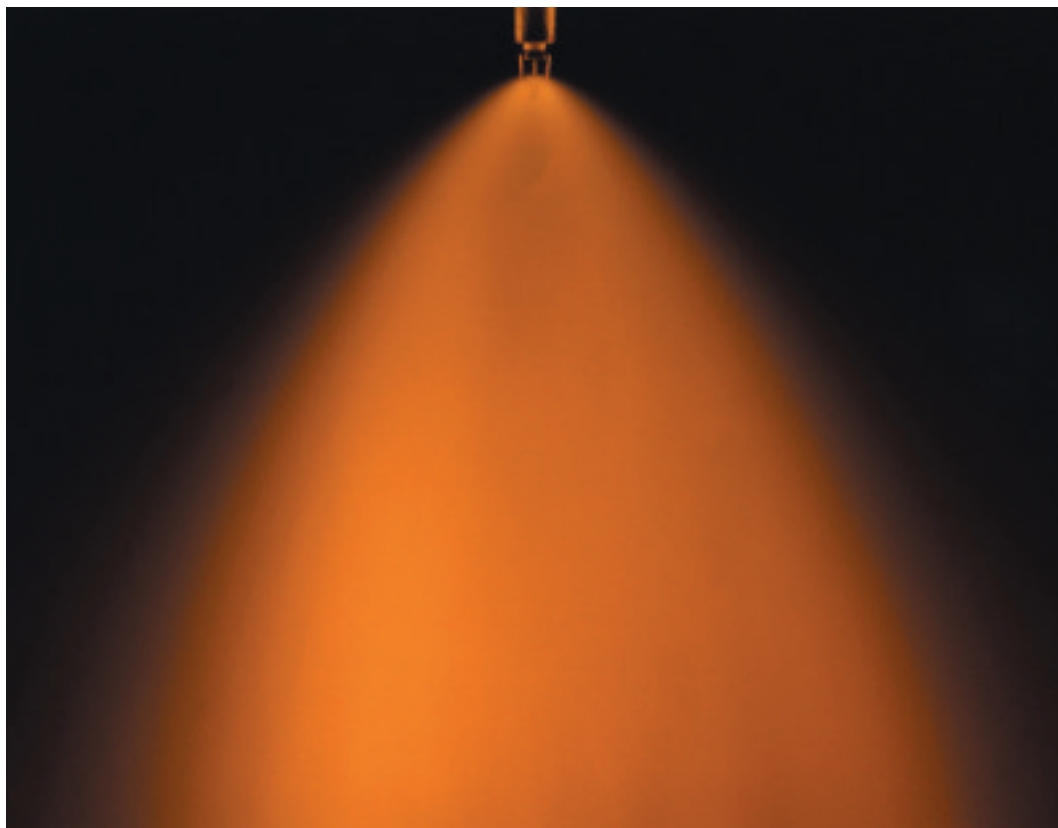
IFP

10 good reasons for specifying BASEC approved cable

1. **Comprehensive** – BASEC conducts tests and approvals to all specifications and standards in the electrical sector.
2. **Fit-for-purpose** – quite simply, by specifying BASEC-approved cable you know it will be fit for purpose. Our auditors follow rigorous test and compliance protocols of the product and processes throughout the manufacturing cycle.
3. **Safety** – certification ensures safety for the supplier, distributor and the end user, removing possible issues further down the line. BASEC approved cables are rigorously tested for shock, compression damage and insulation strength. They are better quality and carry a lower risk of receiving shock or a fire starting as a result of accidental damage during installation.
4. **Quality** – BASEC approved cable is always manufactured under an approved quality management system to BASEC's Product Certification Requirements, ensuring continuity of high quality levels. Auditing and assessment can also lead to certification to international standards, ISO 9001 (Quality), ISO 14001 (Environment) and OHSAS 18001 (Health and Safety).
5. **Endorsement** – specifiers are always looking for third party approval of products and there is no higher level of approval than the BASEC mark.
6. **Cost** – the difference in cost between cables that carry the BASEC mark and those that don't may not be much, but it is a small price to pay for reassurance.
7. **Marketing** – organisations may apply for a licence to display the BASEC mark on their products once BASEC has verified that the products fully comply with specification. We are also part of the Voltimum internet portal representing the European electrical industry, playing an active part in providing expert advice and comment.
8. **Testing** – independent testing ensures compliance to specification and relevant standards and is used to help provide evidence-based reporting where required.
9. **Monitoring** – through rigorous examination of manufacturing processes and controls – and ongoing follow-up – BASEC ensures that products meet appropriate national or international standards.
10. **Communication** – as an independent body, BASEC communicates with the electrical supply industry on behalf of members through its website, bulletins, seminars, industry bodies and the media. We are always happy to answer technical enquiries and discuss any questions people have about cables.

BASEC
BRITISH APPROVALS SERVICE FOR CABLES

Watermist helps re fire challenges



The alarming frequency of fires in residential buildings around the world is increasing the awareness of the contribution that watermist systems can make to life safety in these high risk environments. John Allen explains, and describes the latest system launched by Tyco specifically to improve life safety in the residential and care homes markets.

By John Allen

EMEA Marketing
Director at Tyco Fire
Suppression & Building
Products

Home, in whatever form it takes, is still the place we are most likely to be at risk from a fire, as the latest figures from the Department of Homeland Security's Federal Emergency Management Agency's US Fire Administration bear out. They show that, in 2007, fires in residential buildings accounted for approximately 84 percent of all fire deaths in the USA, and 79 percent of civilian injuries. In that year, there were 414,000 reported residential fires, 2,895 related deaths and 14,000 injuries, costing the US a direct loss of \$7,546 million.

It will probably come as no surprise to learn that, according to a report prepared in the UK by the BRE (Building Research Establishment) for the Department of Communities and Local Government, cooking fires are commonplace. In the USA they account for 26 percent of all residential fires. Other causes cited in the BRE report include: unattended ignited candles; discarded matches or cigarettes; faulty electrical items; and overloaded

plugs or faulty circuit breakers.

Of course, the term "residential" covers a multitude of different building types. In addition to conventional family homes, the term embraces houses in multiple occupation (HMO), apartments, hotels, motels, dormitories, and boarding houses. It also includes what is probably the highest risk environment – residential care homes, where there may be only a few staff available to assist elderly residents to escape at night. Such vulnerable residents may need to be woken up, easily become disorientated, may be elderly or infirm, could well be under the influence of prescription drugs, and need one-on-one assistance to evacuate the building.

It is in this type of environment that a watermist system has the most to contribute towards life safety. They also have a major role to play in residential buildings where safe evacuation is possible only via lengthy escape routes, where the building has reduced fire separation or compartmentation,

solve residential

or where fire and rescue service access to the building may be restricted.

Anatomy of a watermist system

In essence, there are two types of watermist system. High-pressure watermist systems are stand-alone solutions best suited to the protection of an enclosed space or specific asset, such as a paint spray booth or piece of production equipment. Low-pressure watermist systems, on the other hand, are designed to use small amounts of water for fire control in open areas and so are an appropriate choice for escape ways and exit routes in residential premises. Both work on the principle of using the thermal energy generated by a fire to convert ultra-minute water droplets into steam – 100-micron droplets, for example, take only 0.0006 seconds to convert to steam – to provide rapid and effective fire suppression. On discharge, the water absorbs heat when raising the temperature of the water to 100°C; it absorbs even more heat when evaporating that water into steam. The evaporated water expands in volume by a factor of 1620:1.

So, they use very small amounts of water to achieve suppression and control, which nowadays is a particularly significant consideration, as many governments are endeavouring to reduce water usage. This also reduces the space required for water storage, which may well be an important consideration for an installation in a small residential care home.

Another “green” factor in their favour is that, at a time when concerns over global warming and atmospheric contamination are high on many



extension to its existing range of fire protection sprinkler products. While watermist systems should not be seen as direct replacements for proven fire suppression sprinkler systems, they do make a valuable contribution to life safety in residential fire protection installations.

The system is designed to provide enhanced life-safety protection for LH (Light Hazard) residential and OH3 (Ordinary Hazard) light commercial hazards as defined in BS EN 12845:2004 (*Fixed fire fighting systems, automatic sprinkler systems,*

They use very small amounts of water to achieve suppression and control, which nowadays is a particularly significant consideration, as many governments are endeavouring to reduce water usage. This also reduces the space required for water storage, which may well be an important consideration for an installation in a small residential care home.

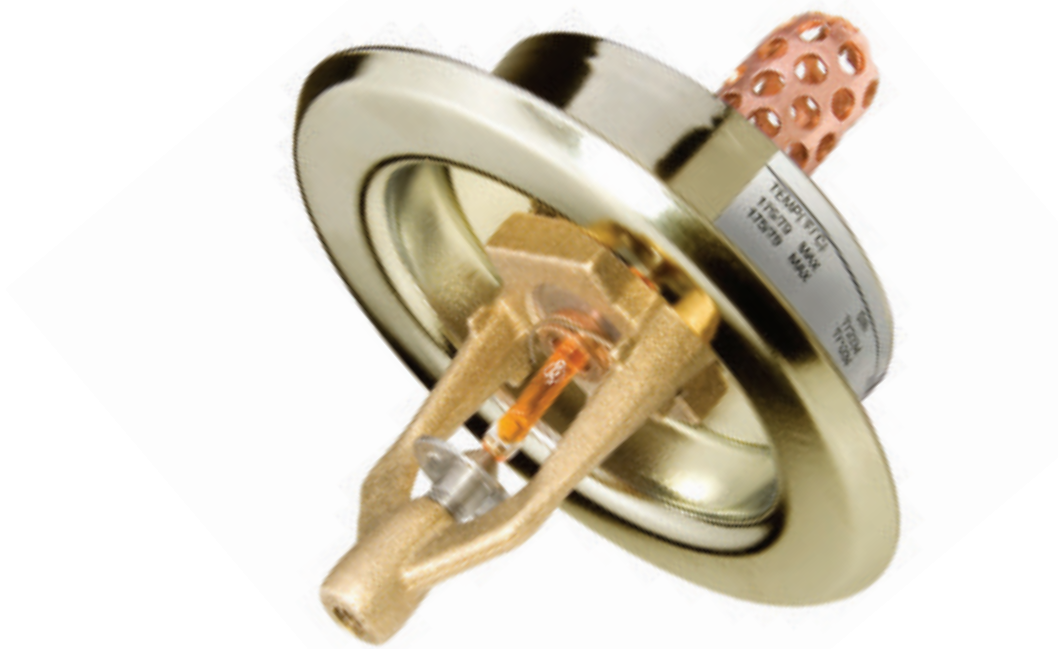
specifiers’ and end users’ agenda, the use of water as a suppressant tops the environmentally acceptable league table. It also means that watermist systems are suitable for occupied areas. In fact, watermist systems can aid the suppression of toxins and smoke from the atmosphere by what is known as “smoke scrubbing” that also prevents smoke damage and exposure to the building’s occupants.

New AquaMist® ULF system

AquaMist® Ultra Low Flow has been introduced by Tyco Fire Suppression & Building Products as an

design, installation and maintenance). In addition to residential buildings it is, therefore, also suitable for schools and other similar hazards.

AquaMist Ultra Low Flow combines the ease, simplicity and dependability of conventional sprinkler systems with the greatly reduced water supply requirements of watermist systems. Using innovative micro-droplet water pressure technology to deliver an enhanced watermist performance, AquaMist Ultra Low Flow uses nearly 70 percent less water. It requires a higher pressure than a normal sprinkler system, but without the



need for extremely high water pressures and the exotic components used by some watermist systems.

It is a fully engineered delivery system that comprises a preassembled fire pump that is sized for the system pressure and flow requirements, a fire-pump controller, alarm-check valve cabinet and all of the other ancillary components necessary to ensure efficient, trouble-free installation. This pre-assembled system supply unit requires only a power supply for the control cabinet and pump controller, and an adequate water supply piped to the pump-supply piping inlet. A wide selection of

penetrate the fire plume, making direct contact with the fire in much the same way as a conventional water sprinkler system. At the same time, some of the droplets are dragged into the combustion zone where they vaporise, absorbing energy, displacing oxygen and reducing the heat output of the fire. Finally, the large surface area of the small droplets that are not directly exposed to the fire provide extremely efficient pre-wetting, smoke layer cooling and radiation blocking to help ensure that the fire does not grow or spread.

Much of the system's appeal comes from the fact that AquaMist Ultra Low Flow limits the

On discharge, AquaMist Ultra Low Flow droplets have the required momentum to penetrate the fire plume, making direct contact with the fire in much the same way as a conventional water sprinkler system. At the same time, some of the droplets are dragged into the combustion zone where they vaporise, absorbing energy, displacing oxygen and reducing the heat output of the fire.

piping materials can be used, including the recently introduced Grinnell® G-Press® and even CPVC (Chlorinated Polyvinyl Chloride) engineered thermoplastic piping material.

With AquaMist Ultra Low Flow, the mist is achieved at a nozzle pressure of between 7bar (102psi) and 17.2bar (250psi) – depending on the type of nozzle that is selected – and a water application density as low as 1.5l/m² (litres per square metre) compared with as much as 4l/m² to 5l/m² for a conventional sprinkler system. This allows pipe diameters and system weight to be reduced, which leads to easier installation, lower installation costs and substantially lower water usage.

On discharge, AquaMist Ultra Low Flow droplets have the required momentum to

growth of a fire at an early stage and as it is developing, but before it can reach a mature stage. The significant reduction in water run-off and damage to the protected space and its contents, coupled with much easier clean-up has added to its immediate end-user interest.

AquaMist Ultra Low Flow system layout and hydraulic design is provided by Tyco Fire Suppression & Building Products trained installation contractors, where system pressures, equipment type and nozzle selection is determined using the unique Tyco SprinkCAD® design software. The new system is available only through fully trained and approved distributors, and their installations carry a full AquaMist Ultra Low Flow ten-year warranty.

IFP

John Allen is EMEA Marketing Director at Tyco Fire Suppression & Building Products. More information is available by telephone on +44 (0) 161 875 0402, by fax on +44 (0) 161 875 0493, or via email at marketing@tyco-bspd.com



Protecting our most valuable assets

AquaMist™ Ultra Low Flow watermist systems & solutions

Tyco's FS&BP division is the world's #1 sprinkler products manufacturer; our products protect buildings and property all around the world.

We know sprinklers work and we know why they work. We also know that sometimes you have the chance to go one step further...



- Fire protection & Life Safety watermist solutions
- Residential & hotel installations
- Simple to install, easy to use
- Lightweight pipe: CPVC or G-Press®
- Installation contractor designed systems
- Full AquaMist support
- Approved/trained installer channel access

*Contact us for more product or
installer information*



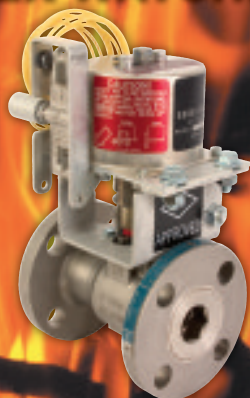
tyco
Fire Suppression
& Building Products

Tyco Fire Suppression & Building Products
Unit 6, Westpoint Enterprise Park, Clarence Avenue
Trafford Park, Manchester, United Kingdom, M17 1QS
Tel +44 (0) 161 875 0402
Fax +44 (0) 161 875 0493
Email info@tyco-bspd.com
www.tyco-fsbsp.com

For all enquiries please quote: 1017

Now
FM Approved!

DURING A RAGING FIRE WHO TURNS OFF FIRE-SAFE VALVES? ESSEX WATCHDOG®



— the **only actuator** that operates valves automatically in an emergency—AND lets you operate the same valves manually in day-to-day service *without voiding or tampering with the fusible link!* One valve does two jobs—reducing installation costs and leak paths. Butterfly valves also available.



ESSEX FLUID CONTROLS (314) 832-4500
7700 GRAVOIS, ST. LOUIS, MO 63123
FAX (314) 832-1633

Quality Fire Resistance Testing



Fire resistance test equipment for indicative testing and certification of horizontal and vertical specimens, including columns, beams & ducts. Suppliers to national certification laboratories worldwide.



Newton Moor Industrial Estate, Hyde, Cheshire
SK14 4LF, United Kingdom.

Tel: 0161 368 8419

Fax: 0161 368 3813

Email: sales@furnace-construction.co.uk

Metallurgical Heat Treatment Furnaces ■ Kilns for Advanced Ceramics
Non-Ferrous Melting Furnaces ■ Cremators and Incinerators



The future of fire detection has already begun.

SecuriStar® fire detectors: the new generation

Securiton AG, Alarm and Security Systems
www.securiton.com, info@securiton.com

A company of the Swiss Securitas Group

 **SECURITON**

For your safety



Working in concert to deliver fire protection to the Royal Albert Hall

By Rowland Davies

Marketing Services
Manager, Apollo Fire
Detectors Limited

London's Royal Albert Hall is one of the most recognisable concert venues in the world. Opened in 1871 by Queen Victoria, it hosts over 350 performances every year. These include not only classical and popular music concerts, but also events as diverse as tennis tournaments and an audience with the Dalai Lama.

As an international entertainment venue in constant use, gaining access for refurbishment or essential maintenance can be difficult. This is further compounded by restrictions due to its status as a Grade I listed building. In addition, the venue is a registered charity and operates without any public subsidy so any expenditure must be carefully planned.

A somewhat piecemeal approach to building maintenance in the past had led to a number of different fire detection systems being installed over time. These included a twenty-five year old conventional system, a radio system, an analogue addressable system with five networked panels and a separate sprinkler system.

The conventional system was unreliable due to age, and the need to replace it presented the opportunity to fully review the fire protection

across the whole site. In line with current legal requirements, a fire risk assessment was carried out. As a result, it was decided that there was a need for a single fire detection system. The proposed expenditure was significant so Tom Scullane, Building Services Development Manager at the Royal Albert Hall, carried out research to ensure that the best possible solution was found.

"We knew the existing fire protection had issues that needed to be resolved," says Tom. "None of the systems were really compatible, so trying to reset them in sequence after an incident was a real chore."

"Even on an everyday basis, staff had to learn and remember how to reset the system after activation – it was unnecessarily confusing to use. We wanted to be confident that whatever solution we arrived at, it would provide us with a reliable

Wireless fire detectors provide protection in the Royal Albert Hall's famous domed roof



and flexible fire system that was simple to use and would be future-proof."

Having made detailed enquiries regarding different technology options, the closed system approach was dismissed as being too restrictive and costly. The Royal Albert Hall team then started the process of finding a company that could help them develop an open protocol fire detection system.

Building the team

Leader Systems LLP first became involved on the project in June 2007. The company has a reputation as a fire systems house that is able to deliver large, complicated projects on time and to budget. Even so, the client wanted to be certain that the company fully understood the challenges involved. A series of discussions followed, during which Leader Systems recommended a system based on an open digital protocol to give the venue the flexibility and future-proofing it required.

Fact-finding trips were arranged so that the client could meet the preferred manufacturers – Advanced Electronics (control panel) and Apollo Fire Detectors (devices). The two companies were able to demonstrate the proposed technology's capabilities at first hand, including ease of installation and a PC-based graphics system. The client was also shown a monitoring tool which enables authorised users to remotely log into the fire network, receive email notification of any fires, faults and disablements, isolate devices and notify the relevant departments or users.

Working in partnership, Leader Systems and Advanced Electronics discussed the problems likely to occur during installation and day-to-day operation, including nuisance events and false alarms. In addition to the use of a PC-based graphics system, a suggestion was made about monitoring the fire system. This requirement was met using new IP Gateway technology from Advanced Electronics.

The strong partnerships between the fire detection companies clearly impressed the management team at the Royal Albert Hall. Leader Systems was appointed to undertake the design, installation and commissioning of the new fire detection

system in July 2007.

The technical requirements were agreed by mid-September and Leader Systems delivered a fire system strategy at the beginning of October. It included a clear methodology for removal and replacement of the fire equipment, so that the client understood exactly what would happen and when. It also illustrated how the fire detection project would correspond with restricted access times due to other essential refurbishment work taking place around the building.

Meeting client requirements

Leader Systems recommended an intelligent fire detection system based on Apollo's open digital protocol to overcome the historical issues with operation, performance and ongoing maintenance.

Having used Apollo-based fire systems very successfully for many years, Leader Systems was confident in specifying their open digital protocol. Because it is used by a large number of product and panel manufacturers, Apollo protocol gives freedom of choice and doesn't tie the client to a single company or range of fire detection products, so it was a perfect choice for the Royal Albert Hall.

The system design centres around a standard network of six four-loop Advanced Electronics control panels. To meet the need for a single point of information, a graphics package that enables staff to pinpoint any incidents on the ground plans of the building was specified – a much more user-friendly interface than the multiple system panels it replaces. Leader and Advanced also collaborated on the development of a bespoke mimic panel that indicates damper activation as a result of an alarm.

Apollo's Discovery and XPander ranges of fire detectors were chosen to meet the environmental and architectural demands of the Royal Albert Hall. The Discovery range of intelligent fire detectors meets several key client demands: proven reliability in the field, adaptability to changing conditions and protection against unwanted alarms. Leader specified these devices for the majority of the building.

However, there are some areas where hard-wired devices could not be installed, such as the ceiling of the auditorium. For these areas, XPander wireless fire detectors were specified. These devices are fully compatible with the intelligent fire system and simply connect to the control panel via an interface, which is wired to the loop. They are then recognised by the control panel as another detector connected to the system.

As the Royal Albert Hall is a listed building, the new fire detection system had to use existing wiring. This raised some technical issues, which the choice of appropriate technology was able to overcome. For example, the original analogue addressable fire system needed a separate sounder circuit. Apollo integral base sounders enabled use of existing wiring to replace these, creating integrated loops, while zone monitors and DIN-rail interfaces enabled the new fire system to interface with other critical equipment.

Fire system strategy

The fire system strategy split the work into five phases. Phase 1 covered the replacement of the conventional system, including the installation of a temporary new addressable control panel to monitor the conventional zones in the Victoria kitchen and restaurant areas – now the Coda Restaurant – where other works were under way. The temporary panel enabled this area to be linked in permanently to the new fire system at a later date without loss of cover.

Phase 2 addressed the Circle area of the auditorium, which was equipped with a conventional system. This was a real challenge because the new intelligent fire system would normally have been configured as loops. However, the Royal Albert Hall's listed building status precluded any rewiring. Leader System's solution was to use Apollo zone monitors initially to connect existing devices to the new analogue panel. They subsequently removed the zone monitors once the new analogue addressable devices were installed, connected to the original wiring. The new system is therefore analogue addressable, but configured radially. This variation to the British Standard was discussed and agreed with all interested parties.

There were two parts to Phase 3. Firstly, a contingency was built in to enable loop installation in the Circle areas when access was possible, in case the Phase 2 changeover using the existing wiring proved unsuccessful. Secondly, the old radio detection system was replaced with new wireless fire detectors. This system is installed in the dome of the roof.

The plan for Phase 4 was to replace the old analogue addressable system with the new intelligent system and commission all the new fire products. Switch-over of all the commissioned components to a single system and development of the graphics package was scheduled in Phase 5.

Unforeseen circumstances

However, the best-laid plans can go awry. In June 2008, as Phase 4 was due to start, the existing analogue addressable system ceased functioning. This represented a breach of the agreed methodology and gave the client serious concerns about existing fire cover.

Following an emergency meeting, the fire system companies worked together to deliver a revised



Apollo's wireless fire detectors helped to comply with Grade I listed building restrictions

methodology that would deliver a fully compliant fire detection system. It involved the like-for-like replacement of 19 loops of devices and five control panels. There was just one snag: the original four-month schedule now had to be reduced to just three weeks.

There was no room for error because any failure to meet access slots for certain areas would cause huge knock-on delays. In addition, The Proms season was due to start on the 14th of July: and this is not the sort of event you can cancel.

Leader Systems stationed a project manager and a technical support engineer permanently on site, and rostered four pairs of installation and commissioning engineers who worked to a tight schedule to ensure that the work was completed on time. They finished a day early.

Learning curve

All the companies involved on the Royal Albert Hall project have learned something from the experience. Leader Systems now knows that, even under severe time constraints, they are capable of adapting to the most extreme circumstances and delivering on time. Advanced Electronics' development of a bespoke damper panel and graphics interface proves that the latest technology can be successfully adapted to the needs of an historic landmark building.

Apollo Fire Detectors, meantime, has found a new use for its wireless fire detectors. Although it isn't a main application for them, the XPander devices offered a novel solution for providing temporary fire cover in areas of the building where refurbishment was in progress. Once work was complete, hard-wired devices were installed and the wireless devices removed for use on the next phase.

Conclusion

The client fully appreciates the unique circumstances that the Royal Albert Hall presented and the added value contributed by all the companies involved in the fire detection project. Building Services Development Manager Tom Scullane concludes: "I needed a fire detection system that put me in control and the combination of Leader System's design, Advanced's control equipment and Apollo's open protocol gave me that." **IFP**

ATTENTION

**FM
APPROVED**



**all 10.5m & 9.1m High Buildings
The Best Sprinkler to Install**

THE N252 EC

**Extended Coverage with No In-Rack Sprinklers
Huge Savings on Materials & Labour**

Covering Solid-Pile, Palletized and Single, Double, Multiple Row Racks for Class I-IV and Cartoned Unexpanded and Cartoned Expanded Plastics

Building Height: 9.1 m Storage Height: 7.6 m Coverage: 18 m²

K-200 ESFR	K-240 ESFR	K-360 ESFR	K-240 CMDA	Ultra K17 K-240	N252 EC K-240
9.3 m ²	9.3 m ²	9.3 m ²	9.3 m ²	9.3 m ²	10 m²
3.4 bar	2.4 bar	15 psi-UL 20 psi-FM	1.6 bar (32.6 m/min)	1.5 bar	2.1 bar
12 sprs	12 sprs	12 sprs	186 m ²	15 sprs	7 sprs or 110 m²
4550 L/min	4550 L/min	4550 L/min 5120 L/min	6600 L/min	4550 L/min	Sys. demand 3660 L/min
950 L/min HS	950 L/min HS	950 L/min HS	1900 L/min HS	1900 L/min HS	950 L/min HS

Building Height: 10.7 m Storage Height: 9.1 m Coverage: 13.5 m²

K-200 ESFR	K-240 ESFR	K-360 ESFR	N252 EC K-240
9.3 m ²	9.3 m ²	9.3 m ²	13.5 m²
5.2 bar	3.6 bar	1.4 bar-UL 1.4 bar-FM	2.8 bar psi
12 sprs	12 sprs	12 sprs	9 sprs (min. of 110 m²)
5510 L/min	5500 L/min	5120 L/min 5120 L/min	Sys. demand 5440 L/min
950 L/min HS	950 L/min HS	950 L/min HS	950 L/min HS

**PATENT
PENDING**

- Wet Pipe or Pre-action Systems (when they meet the equivalency of a wet system).
- Approved for Non-combustible Obstructed Construction.
- Refer to Reliable Bulletins 008 & 908 for more information.
- Refer to FM Global's Data Sheets 2-8N, 2-2 & 8-9 for installation and design of Control Mode Special Application (CMSA) and extended coverage sprinklers.

9108 PIN 9959670372

Reliable®
TECHNOLOGY • QUALITY • SERVICE

For more information and to find your nearest location, see our website
www.reliablesprinkler.com

The Reliable Automatic Sprinkler Co., Inc.
Manufacturer & Distributor of Fire Protection Equipment



Sprinklers as a Core Fire Safety Measure

Sprinklers to upgrade fire safety

Following the tragic fire in Lakanal House in Camberwell on 3rd July, in which six people died, many of us felt a depressing sense of failure. We knew that sprinklers could have prevented this tragedy. We also knew that we had failed to persuade decision-makers to install sprinklers when making upgrades to fire safety while refurbishing buildings.

By Alan Brinson

European Fire Sprinkler Network

Some will say I should not comment until the investigations are concluded. Sadly, investigations into tragic fires all too often take years without any clear conclusions or recommendations emerging. Two years on we are still waiting for lessons to be drawn from the fire in the Penhallow Hotel in Newquay, which levelled the hotel and killed three people; and from the fire in a vegetable packing warehouse in Atherstone-on-Stour, which collapsed killing four fire-fighters. In the latter case

I am told that the owner is rebuilding with sprinklers, so someone has learnt from this fire. Unfortunately the priority for investigations seems to be to apportion blame rather than to prevent a repeat. This approach implicitly assumes that the existing measures are adequate; all that is necessary is that they be followed. The problem is thus one of education and can be addressed by manuals and drills.

While education and drills are helpful they cannot



be the first and last line of defence against fire in a building that is inherently unsafe. Moreover in a block of flats housing frequently changing populations they cannot be entirely effective. I hope that this time the enquiries consider whether sprinklers could have made a difference. I also hope that they are conducted in a public manner, as called for by Harriet Harman MP, so that evidence can be given for all to see. I know I am prejudging the conclusion but there has never been a high-rise fire whose spread has not been prevented by a properly designed, installed and maintained sprinkler system. It would be remarkable if the Camberwell high-rise fire were the first that could not have been controlled by a sprinkler system.

Today fire safety experts, including those working for the government, agree that sprinklers work. Rather, the discussion is about cost and the economic case in terms of lives saved. The cost to fit a sprinkler system in an existing block of flats is about £1,000-£2,000 per flat, with the expectation that it would be at the lower end of this range. Over the lifetime of the sprinkler system this works out to about £1 per week, including maintenance. For a typical hotel room it would be about 30-40p per night, which is much less than a packet of peanuts from the minibar. By contrast I am told that the cost to replace the lifts in a high-rise building, which must be done periodically whereas the sprinkler system only needs to be installed once, is £6,000 per flat. Sprinkler retrofit can be done and has been done in many high-rise buildings in the UK. Clearly it is important that a sprinkler system is properly maintained but maintenance costs are low and critical components such as pumps and valves are in areas locked from public access where they can be tested without disruption to the residents of the building. Within the flats themselves all that is needed is a visual check of the sprinklers.

Research carried out by the BRE for the government earlier this decade found an economic case for fitting sprinklers in blocks of flats higher than ten storeys. Consequently in the last change to Approved Document B, which took effect in April 2007, sprinklers were introduced as a requirement for blocks of flats with a floor higher than 30m. If Lakanal House were built today it would be fitted with sprinklers. Would it therefore be wise for high-rise social housing to be retrofitted with sprinklers when major refurbishments take place? Social housing is at greater risk of fire than owner-occupier housing, so the economic case for sprinklers is even clearer. In the United States some States and cities have gone further and mandated the retrospective fitting of sprinklers in all high-rise residential buildings. They include Atlanta, Boulder, Harrisburg, Louisiana, Massachusetts, Maui, Miami Beach, Missouri, Montana, Nebraska, Phoenix, Scottsdale, San Jose and Tucson. The ordinances all have lengthy deadlines so that owners have many years to finance and plan the work.

Sprinklers for sustainability

Coincidentally the London mayor's office has recently published a "London Housing Design Guide" draft for public consultation. This document does not refer to fire safety but is interested in sustainability. Fire has a role to play in sustainability, since a building vulnerable to fire is not, in the long term, sustainable. The government is considering this question and has commissioned the BRE to study it. First conclusions are due this autumn. Meanwhile an insurer, FM Global, has considered whether there is an environmental case for fitting sprinklers in buildings, based purely on carbon emissions and without including any consideration of toxic fire gases or fire-water run-off





into rivers and groundwater. Using mostly public data it has estimated the frequency and size of fires in different types of buildings, the carbon emissions with and without sprinklers, and the embodied carbon required to fit sprinklers. The balance is very clearly in favour of sprinklers, with even a standard office building able to save 1-2% of its lifetime carbon emissions with the savings being ten times as great as the carbon embodied in the sprinkler system. For an industrial building the savings can be as great as 14% of lifetime carbon emissions with the savings more than 100 times greater than the carbon embodied in the sprinkler system. This is a relatively painless way for the UK to make substantial savings in carbon emissions!

At a recent Parliamentary seminar, we learned that the scope of the Building Regulations has recently expanded to include sustainability. So if fitting sprinklers in new buildings could reduce net carbon emissions, Approved Document B can be updated to require them.

Sprinklers for universal design

The Norwegian government has published a proposal for public comment that would require sprinklers to be fitted in all new housing of more than two storeys, as well as in new hospitals and health care facilities. The rationale behind this initiative is to make buildings sufficiently safe for people with disabilities, consistent with the government's policy to increase the number of residential buildings that meet the goals of universal design.

In Scotland the Building Standards Division of The Scottish Government is investigating the costs and benefits of installing sprinklers in all new hospital buildings. Fires in hospitals cause few

deaths but they do cause huge disruption with lost output in terms of cancelled operations. This becomes worse when equipment takes a long time to replace. Moreover some patients' lives can be endangered if they are disconnected from equipment so as to be evacuated during a fire. A defend-in-place strategy is safer for them but only possible if sprinklers are fitted to make sure the fire stays small and is quickly extinguished.

Why install sprinklers?

This article has given three reasons to install sprinklers. They are a way to improve fire safety in existing buildings to an acceptable level; they are a means to reduce net carbon emissions from buildings; and they are a means to embrace the concept of universal design.

There is a fourth reason, and it is to reduce the societal impact of fire. In recent years discussions with the Government about whether to install sprinklers have focussed on the economic case but the benefits have been limited to those from saving lives and preventing injuries. This narrow view makes it acceptable that a recent fire in an unsprinklered plastics packaging facility in Leominster should necessitate the evacuation of 150 people from their homes; close road and rail links; close five schools and colleges, some of which were holding A-level examinations; and force hundreds of local people to stay indoors with closed windows on a hot summer's day. All this is acceptable because, fortunately, nobody was hurt. I doubt the residents of Leominster would agree. We can do better than this. The evidence is mounting that it makes sense to fit sprinklers in many more buildings, for a number of very good reasons. It is time to make sprinklers a core fire safety measure.

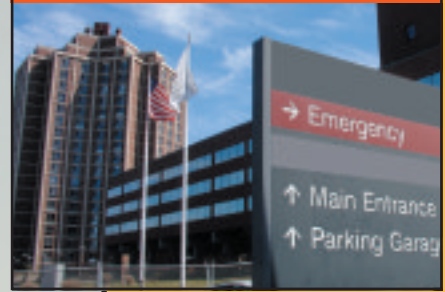
IFP



FlexHead commercial fire sprinkler connections: What's your application?

- More productive installers with lower installation costs.
- Perfect center-of-tile eliminating virtually all punch list items.
- Highest quality available featuring all stainless steel construction.
- Meets all code requirements including NFPA 13 and IBC.
- Fast-Track construction with simplified project management.
- Seismically qualified without the need for an over-sized ring.
- Meets USGBC objectives for green building design & construction.

Prescribed by leading hospitals



A smart choice for schools



Welcomed in the finest hotels



A bargain for retail buildings



FLEXHEAD[®]
INDUSTRIES 
The pioneers in flexible fire protection
800-829-6975 www.flexhead.com





Technology based Fire Pump Controllers – ARE YOU READY?

By Rob Harris

Pump Controller
Marketing Manager,
Eaton Corporation

It's been known for quite some time that technological advancements have been filtering down to fire pump controllers and are driving product enhancements, which can be of great benefit to the user.

Manufacturers have been providing micro-processor based units for several years, and continue to work diligently to incorporate the latest technology into their controllers with every new product release.

This technology transformation has resulted in a requirement for both sales and support personnel, at all levels, to continuously upgrade their knowledge of the ongoing changes and enhancements. Yesterday's hands on "Mr. Fix-it" is quickly giving way to today's "Techno-Jockey" who is completely at ease in this ever changing environment.

Support specialists are being asked to be avail-

able at a moments notice and are required to have a solid understanding of not only the working of the controller, but how its' operation affects the system within the pump room. It is no longer acceptable to provide technical information via printed page or CD-ROM's only. Controller manufacturers' web sites must contain the most up to date information, so that it may be downloaded, instantly from anywhere on the globe, in multiple languages. Such are the requirements in today's "techno-age".

With today's fire pump controllers enhanced diagnostics, communications and data retrieval

features, more information is readily available at the touch of a button, than ever before. And with the trend towards features and functions being included as standard instead of optional, support personnel must be prepared to continuously upgrade their skill set.

Controllers can now continuously monitor all alarm and status conditions, supply on-line tracking of events and generate not only electronic reports, but dial up text-enabled cell phones and pagers with alarm messages.

Most manufacturers have made printers, which produce a physical print out, an optional item, while concurrently adding communications options such as Modbus, Ethernet via RS232 and/or RS485. Some have incorporated floppy disk drives while others can download and upload data directly to laptops, or USB storage devices, which allow for data transfers at a secure site away from the adverse conditions found in some pump rooms. Software programs and embedded web pages provide a large amount of data that can be used for troubleshooting purposes.

Once the information is gathered, the user can analyze the data remotely in a clean, dry and safe environment, away from the pump room. The

– making it easy for the user to select and program parameters in a logical, sequential way.

During commissioning, there is considerable pressure to have the controller perform efficiently within the confines of the pump room. Should a problem arise, the controller must be able to be programmed, and troubleshooting must occur within a reasonable amount of time. Inability to program the unit will add to the frustration level of everyone in the room. Fire protection personnel must be prepared to attend training programs and information sessions to keep their skills current. Fortunately, there are a variety of sessions available from industry organizations and manufacturers to choose from.

Even though there is a substantial amount of information available, it's still what you do with the data that's important. Getting the data easily, analyzing it and acting upon it, is the key to better fire protection in the future. Of what use is the technology and data, if it's not utilized properly? If the fire pump controller contains the ability to provide data that can assist with life protection, but is not being used, it will be difficult to elevate it's status to the point where it is a desired purchase instead of a low bid item.

Even with all the technological advances of the product, it's comforting to realize that fire pump controllers are still predominantly relationship based purchases. People still buy from people they can trust and rely on. That puts an increased responsibility on manufacturers to provide top quality service, support and training.

ability to select and program various parameters on a laptop and send to the controller remotely or download via a portable storage medium is becoming more prevalent.

With the cost of pump room space rising, both electric and diesel engine fire pump controllers are being designed to occupy less space. This has been made possible, partly due to microprocessors being incorporated into the units. With a microprocessor based unit, there is generally a reduction in the amount of wiring and internal components that take up controller real estate, allowing for an overall reduction in size.

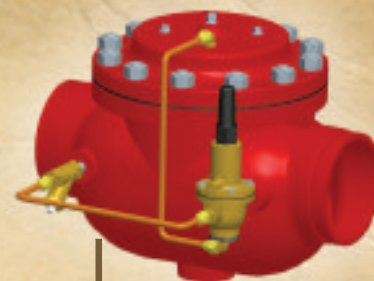
Even with the large selection of controllers already available, new designs are constantly being introduced to the market. Combination units that incorporate a transfer switch and fire pump controller in one enclosure have emerged. As well, the desire to keep a constant pressure in the system has created a need for a new type of product for both diesel engines and electric motors.

The variable speed fire pump controller combines microprocessor technology with industrially proven drives.

With all the technological advances making their way into the controllers, ease of use by the user must still be taken into account when designing new units. Keeping the controllers "user friendly", is vital. Many manufacturers are doing this and have segmented the programming menu into pertinent logical selection/programming areas

What does the future hold in the evolution of fire pump controllers? Will they become a slave on a network, dutifully sending information back to a central command post, all the while standing guard, waiting for a call to start ... or will they become the pump room master, gathering information from various other components such as smart valves, motors and engines then relaying that information to the appropriate place? It's anyone's guess. Remote monitoring of controllers is already in existence and it's not too far fetched to imagine that Ethernet connections will become standard, allowing controllers to communicate to a building management or monitoring system. One thing is for certain, the next generation of fire pump controller will not look anything like yesterday's isolated, stand alone units.

Even with all the technological advances of the product, it's comforting to realize that fire pump controllers are still predominantly relationship based purchases. People still buy from people they can trust and rely on. That puts an increased responsibility on manufacturers to provide top quality service, support and training. And it's being done. The industry is healthy. We've moved a long way in a short period of time, and even though the market has slowed, the need for quality fire protection products will never go away. We're far removed from the days of Henry Ford, where you can have your fire pump controller in any color you want – as long as it's Red ... and it meets code. **IFP**



2009
129FC
Pressure
Reducing

- 2003 108fps
Pump Suction
Control
- 1996 116FC
Pneumatic/
Hydraulic Deluge
- 127-45NR
Fire Flow Bypass
- 1986 127-3FC
Pressure Reducing
- 1983 108-2hp
High Pressure Fire
Pump Relief
- 1980 108FCA
Fire Pump Relief
- 1974 3331
One Way Altitude
- 65FC
OCV enters the
fire market
- 1952 **OCV**
Control Valves OCV Founded

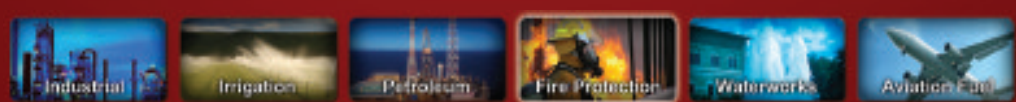
283.5

In today's business climate, we believe a company should be held accountable by more than just regulations and government entities. At OCV, we answer to you-the customer-and you expect a high standard, demand solutions that work, and insist on products of quality.

We also believe in longevity and commitment. Our Sales and Engineering teams offer new talent combined with seasoned professionals for a sum of over 283 years of experience. With companies failing and economic conditions changing overnight, isn't it nice to know you will get an answer every time you need help with an application?


OCV wants to be your partner for managing fluid application needs – large or small. OCV continues to develop its broad spectrum of technical expertise, turning field experience and problem solving knowledge into a refined offering of services and state-of-the-art product.

At OCV we put customer service at the top of our list. Our slogan says it best: Global Performance. Personal Touch.



ONLY FIRETRACE IS FIRETRACE

OTHER TUBE-BASED SYSTEMS
CLAIM TO BE LIKE FIRETRACE.
THEY ARE NOT.



**INSIST ON GENUINE
FIRETRACE SYSTEMS
FOR PROVEN FIRE
SUPPRESSION.**

- + Only FIRETRACE INTERNATIONAL manufactured Systems offer extensively tested Firetrace branded solutions with listings and approvals* from CE, FM, UL, ULC and more than 25 other international agencies.
- + Only FIRETRACE INTERNATIONAL has 20 years of experience with more than 65,000 systems protecting equipment worldwide
- + Only Genuine FIRETRACE SYSTEMS have the tested and proven reliability you and your customers require

Never compromise your reputation by using impostor, untested and unapproved systems – be sure you are using genuine Firetrace.

FIRETRACE®
AUTOMATIC FIRE SUPPRESSION SYSTEMS

Call +44 (0) 1293 780390 (Europe, Middle East, Africa)
or +1 480 607 1218 (US and elsewhere) or e-mail info@firetrace.com
to see why Firetrace is the right solution for your fire protection needs.

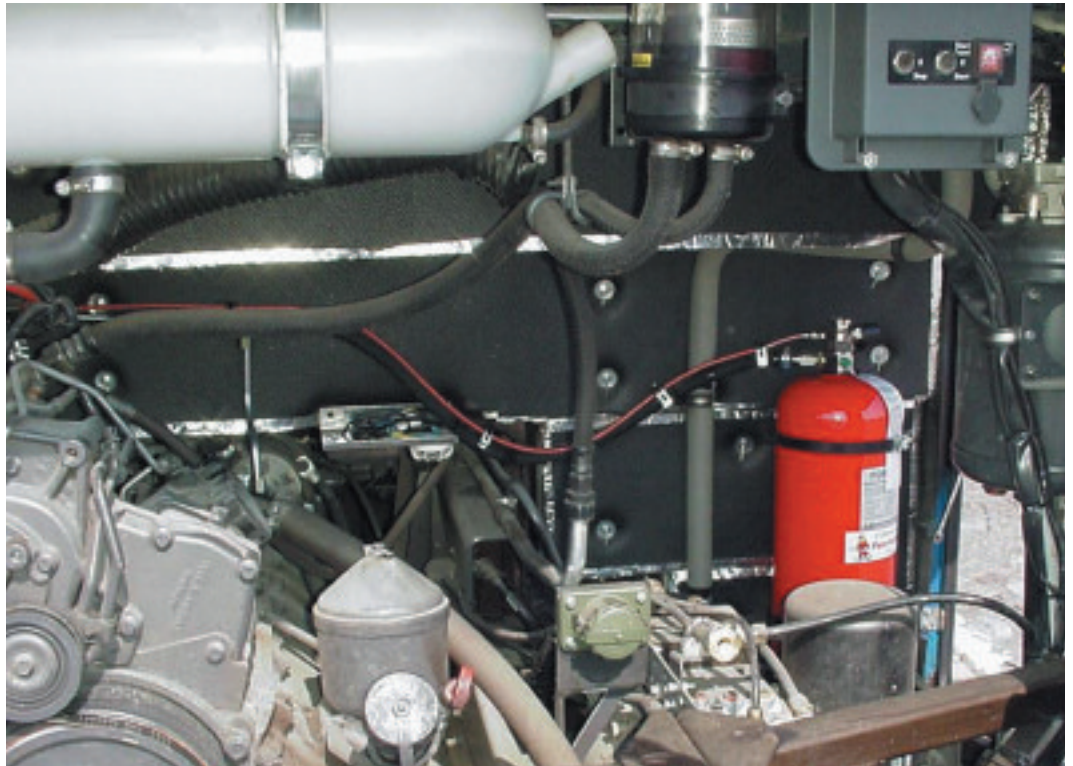
www.firetrace.com
www.firetrace.eu



Firetrace® is a registered trademark of Firetrace USA, LLC / Firetrace Ltd. All unauthorized uses of the Firetrace trademark shall be prosecuted to the fullest extent permitted by the law.

* The Firetrex, FireDeTec, and Firetec brands are the property of their respective owners, and are not the property of Firetrace.

† Listings and Approvals vary by system and agent.



Key asset protection – seeing the bigger picture

By Nick Grant

EMEA General Manager,
Firetrace International

Most of the attention surrounding the protection of “micro-environments” is focused on electrical cabinets. However, while they may top the list of applications, electrical cabinets is just one example of mission-critical assets that need dedicated fire detection and suppression, as Nick Grant explains.

The need for a well conceived business continuity plan is becoming more widely recognised in the wake of the natural and man-made disasters that now seem to plague the four corners of the globe. Businesses are alert to the fact that a major disaster – such as a fire – has the potential to fatally cripple the business. This view is borne out by the Association of Records Managers and Administration in the USA, which states that around 60 percent of businesses that experience a major disaster, such as a fire, close within two years. This is further supported by statistics from the US Labour Department that show that over 40 percent of all companies that experience a disaster never reopen, and that more than 25 percent of those that do reopen close within two years.

What sometimes still has to be appreciated though is that it is not necessarily the size of the fire that causes the organisation’s demise, but the critical importance of the assets that the fire puts out of action, either temporarily or permanently.

The importance of these business-critical assets is not just their cost of replacement, but in the impact their damage or destruction can do to contractual obligations, output, deliveries, service provision and customer relations. This is particularly so in tough economic times when competitors will exploit any shortcomings in a company’s ability to deliver goods or services and, once lost, a customer may never be regained.

This undoubtedly accounts for the increasing number of electrical control cabinets that now



have dedicated fire detection and suppression protection. Certainly they account for a significant percentage of the 150,000 FIRETRACE® installations that Firetrace International has supplied around the world.

So, how do these systems work? FIRETRACE, for example, is a self-contained solution that requires neither electricity nor external power, and is activated automatically around-the-clock without the need for manual activation or monitoring, and requires virtually no maintenance. It comprises an extinguishing agent cylinder that is attached to proprietary FIRETRACE Detection Tubing via a custom-engineered valve. This leak-resistant polymer tubing is a linear pneumatic heat and flame detector that is designed to deliver the desired temperature-sensitive detection and delivery characteristics. It is routed throughout the areas to be protected and, when the tubing is exposed to heat and radiant energy from a fire, it ruptures and instantly directs the suppression agent at the source of the fire.

The provision of electrical power is, of course, a fundamental requirement of virtually every business. But, electrical cabinets are not the only assets that need to be safeguarded and the list expands as companies in every market sector become aware of their dependence on core pieces of equipment. Today this list includes: IT server enclosures, UPS equipment, cable trays and remote telecommunications applications; bus and vehicle engine and generator compartments; on-shore and off-shore petrochemical control centres; wind energy turbines; and ventilation and air conditioning plant. It also embraces: applications throughout the mass transit sector, particularly rail and air transport; dust and mist extraction in the manufacturing arena; fume cupboards and analytical equipment in pharmaceutical companies; and across the utility industries.

Let us take a closer look at just four of these.

IT & telecoms

Statistics bear out the fact that electrical faults are among the main causes of fire, and with the mass

of electronic components, power feeds and cables in IT and telecommunications enclosures, short circuits, defective components and faulty cabling often lead to a fire.

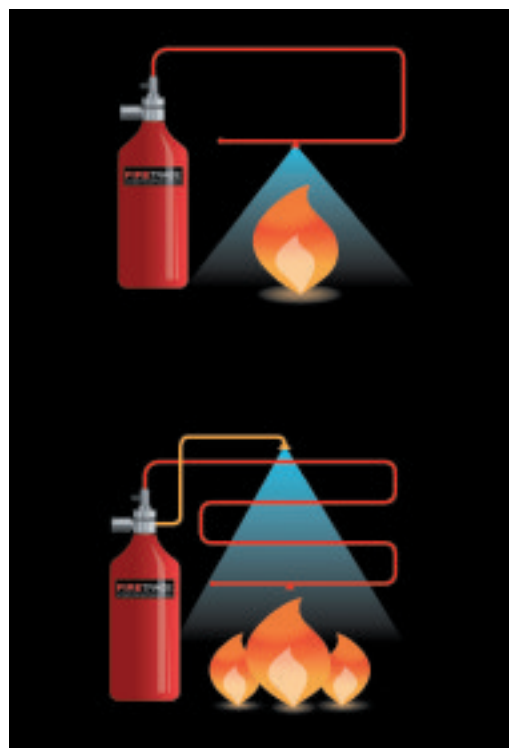
While these were once protected by total flooding systems that used Halon 1301, the signing of the Montreal Protocol – or to give it its full name, The Montreal Protocol on Substances that Deplete the Ozone Layer – banned the effective, but environmentally unacceptable agent. Around the same time it began to become acknowledged that total suppression of the room was not a cost effective way to protect equipment that was invariably housed in “micro-environment” cabinets or enclosures.

The suppression agent of choice for FIRETRACE systems protecting these applications is one of the new generation of clean agents, such as 3M™ Novec™ 1230 Fire Protection Fluid. CO₂ (carbon dioxide), although one of the suppression agent options available from Firetrace International, is certainly not suitable for these applications, where there is a risk of thermal shock to the delicate equipment.

Buses & coaches

A recently completed three-year study by the Norwegian Public Road Administration and the Swedish Road Administration concluded that as many as one in every hundred buses is involved in a fire incident each year. This is supported by testimony given to the United States’ National Transportation Safety Board, which revealed that as many as 2,600 fires break out each year on buses in the USA alone, and that a great many more bus fires go unreported.

Engine and generator compartments are where the majority of fires start and, if a fire is allowed to spread to the passenger area, it is likely to engulf the entire vehicle, threatening passengers’ lives. In addition to the risk of fuel line ruptures, there are any number of flammable liquids present through-





out the engine compartment, including hydraulic, brake, automatic transmission and power steering fluids, plus combustible accumulated grease on the engine block, for which frayed or damaged electrical wiring can easily provide the ignition source.

The dynamics of the airflow in and around an engine compartment when a bus or coach is in motion can seriously impair the performance and reliability of traditional detection and suppression systems when heat and flame may be propelled elsewhere. This has led to the increasing adoption of FIRETRACE, as the system's leak-resistant tubing is routed throughout the engine compartment. Immediately a fire is detected, the tubing ruptures and automatically releases the suppression agent, extinguishing the fire precisely where it starts and before it can take hold.

Petrochemicals

Petrochemical installations, both on-shore and off-shore are high-hazard environments where fire has to be extinguished in the shortest possible time if dire consequences are to be avoided.

While the incidence of petrochemical fires is, thankfully, relatively low, the potential for loss of life and the destruction of high-revenue-earning assets is ever present, perhaps more so than in any other industry. Just 21 years ago, an explosion and subsequent fire destroyed the Piper Alpha oil production platform in the North Sea in the world's worst-ever offshore oil disaster. It killed 167 men and the total insured loss was a staggering US\$ 3.4 billion.

So it is certainly a fire safety challenge where the adage, "large fires start as small fires" has particularly pertinent meaning, as a small fire in a control room can soon spread to the platform wellhead areas. So in vulnerable control and communications enclosures it is essential that there is an immediate and seamless transition from detection to suppression. This is achieved in a UL (Underwriters Laboratories) and FM (Factory Mutual) certified and CE (Conformité Européenne

or European Conformity) marked FIRETRACE system when the proprietary Firetrace Detection Tubing ruptures and automatically and instantly releases the suppression agent.

Wind energy

Reliable fire detection in wind turbines is critical, particularly when they are in remote locations or offshore. Dirt, dust and temperature extremes are known to cause false alarms and false suppression discharge in traditional systems, while vibration can loosen vital connections, rendering the system useless.

Suppression challenges with traditional systems include the fact that most wind turbines have a number of openings to allow air to circulate to reduce the temperature inside the nacelle – the large housing behind the propeller – and that the gap between the nacelle and the support tower is typically an open space. Both of these openings significantly inhibit achieving the "designated agent concentration" in traditional systems, and devising a solution to overcome these challenges typically adds hundreds of kilos to the nacelle.

Instead of attempting to provide protection for the entire nacelle, individual FIRETRACE systems protect critical areas that are most prone to fire. Typically these include: electrical enclosures in the nacelle; near generators; in the tower base; and any adjacent cabinets housing controls or electrical transmission equipment. They are also used to protect: braking systems, generator enclosures; SCADA (Supervisory Control and Data Acquisition) systems; and hydraulic systems that have the potential to rupture near points of ignition.

In all of these applications, FIRETRACE can be fitted as a new-build installation or retrofitted to existing "micro-environments" in a matter of hours. And the solution is highly cost effective, particularly when you consider the alternative, which may result in a bill running into hundreds of thousands or millions of dollars, or even the ultimate collapse of the business.



Further information on FIRETRACE is available from the FIRETRACE EMEA head office in the UK on +44 (0) 1293 780390, or from Firetrace International headquarters in Scottsdale, Arizona USA on +1 480 607 1218. The company's website is at www.firetrace.com

Foam Concentrates and Foam Systems for all applications





By Bill Parlor

Technical Officer,
Association for
Specialist Fire Protection
(ASFP)

Recognising ill advised application guidance for intumescent coatings

Let's be very clear from the outset. Fire protection in buildings can be a more complicated process than it first appears to be. Product manufacturers go through the hoop to prove the relevance of their products and the competence of the installer has always been critical for successful application. ASFP installer members are all required to be third party certificated installers in accordance with recognised schemes operating under the auspices of UKAS, the UK Accreditation Service. This is non-negotiable!

The UK, however, is also suffering from an unfettered plethora of questionable actions from self promoting, self inspecting suppliers/applicators, who are potentially undermining the foundations for future fire safety in buildings.

This article is intended to advise against questionable installations and suspect installers.

Fire doors

We recently witnessed a respected TV programme advising that ordinary timber doors could be converted into fire doors by the simple application of an intumescent coating to the surface. The statement was compounded by the implication – 'Why buy an expensive fire door?'

The answer is very clear!

A reliable fire door will have been tested in a standardised manner by a recognised fire test laboratory. The fire test report will limit the application of the data to the tested construction without willy-nilly extension to all and sundry doors.

It's critical to recognise that the test is on the entire door system, including the fittings and fixings, the door frame, the abutments and the physical dimensions of the entire door system as tested. Approved Document B defines 'fire door' in a very particular way as '*a door or shutter . . . which together with its frame and furniture as installed in a building, is intended . . . to resist the passage of fire and/or gaseous products of combustion and is capable of meeting specified criteria to those ends*'.

The outcome of the test is affected by many factors, such as:

- The type of wood of which the door is made and its density
- The thickness of the door
- The structure of the door including variations from any panelling
- The frame that encloses the door
- The fixings, fittings and spacings between the door, the floor and the frame
- The additional protection required for fixings and panelling.

We must call a halt to the unqualified application of intumescent coatings to any old door and strictly observe the limitations of the field of application certificate for any products that may have been tested on specific door assemblies.

A specific and reliable timber fire door scheme is operated by the British Woodworking Federation at www.bwf.org.uk

Surface coatings

The surfaces of rooms and routes for means of escape in buildings are subject to tested requirements in Approved Document B, ranging from Class 4 to Class 1/ Class 0, noting that Class 0 is not the direct outcome of a single fire test standard. European classifications have also been introduced.

The surface coating on these surfaces will directly affect the fire classification that can be attained.

The ASFP has encountered various situations



where suppliers have encouraged purchasers to apply 'intumescent wallpaper' to a variety of surfaces, without regard to the limitations of the field of application arising from any fire test report. In other words, they play with people's lives for personal profit. Reputable suppliers will know that surfaces can be upgraded, but the results will depend on the materials, substrates and exposure of the surface to be treated.

The ASFP provides useful advice for enhancing the fire performance of surfaces in buildings in its free 'Orange Book' entitled 'Guidance on the classification for the reaction to fire performance of fire retardant coating systems', which can be down loaded without charge from www.asfp.org.uk/publications

have been applied as fire protection to steelwork, it may be desirable to install additional cladding over the steelwork, or in close proximity to it. The ASFP has published Technical Guidance document TGD 13 which advises that a minimum gap of 50 times the dry film thickness of the reactive coating should be provided to allow adequate expansion of the coating in fire. This advice applies to the flat surfaces and to the flange tips, unless specific test data proves otherwise for each steel section concerned.

Where the cladding is mounted onto continuous linear fixings or spacers, made of timber or metal, the spacers should be considered to be a part of the main structure and be duly protected from fire, unless evidence can be provided to justify an alternative action.

The ASFP has published Technical Guidance document TGD 13 which advises that a minimum gap of 50 times the dry film thickness of the reactive coating should be provided to allow adequate expansion of the coating in fire. This advice applies to the flat surfaces and to the flange tips, unless specific test data proves otherwise for each steel section concerned.

European based information will become available as ETAG 028 'Fire retardant systems' from www.eota.be It should be noted, however, that the methods described above do not make claims for improving the fire resistance of elements of structure.

Over-cladding intumescent coatings applied to steelwork

Whilst it may be possible to over-paint some specific types of intumescent coating system, the individual coating manufacturer should always be contacted for advice. Without such advice, over-painting would not be recommended. A regular maintenance schedule should be evaluated in conjunction with the supplier.

In other cases, where intumescent coatings

Fire protection of steelwork

The ASFP 'Yellow Book' has established best practice for the fire protection of solid steel structural columns and beams since 1975 and provides lots of advice. But some advice is being revisited and reconsidered by ASFP and by BSI. One example is whether the fire protection of circular or rectangular hollow steel sections should always be based on test data from I-shaped or H-shaped steel sections? Which tested configuration considers the worst case? New advice has now been published.

In the meantime, the ASFP has published three guides for the fire protection of structural steelwork on the construction site. Publications TGD 14 and 15 provide new codes of practice for the on-site application of boards and non-reactive

sprays respectively. The third publication, TGD 11, provides a code of practice for the on-site specification and installation of intumescent coatings. It provides details such as:

- Surface preparations
- Application procedures
- Control and quality of site applications
- Factors affecting in service performance
- Ease of maintenance
- Repair procedures and standards of finish
- Management considerations
- Validation checklists
- Quality plans and records.

Again, all three TGDs can be downloaded, free of charge, at www.asfp.org.uk/publications

New harmonised European Fire Test & assessment methods

Much of the fire test data and assessment in everyday use in the UK has been based on fire tests to BS 476 Part 21 and assessed to agreed principles as published in the ASFP Yellow Book. Some historical data may go back to BS 476 Part 8 test methods.

Whilst the fire protection of solid steel structure has been well established over the years, new research data can sometimes challenge older practices and this is now apparent for the use of intumescent coatings for the fire protection of 'cellular' beams with circular, lozenge, and/or rectangular web openings.

But now we are entering a period of new kinds of historical test data at a European level as well. In previous years ENV 13381-4 provided a means of determining the contribution of fire protection systems when applied to structural steel. The document was due for review a number of years ago and the review has now almost been completed. Old test data to ENV 13381-8 will become historic information.

The new fire test and assessment details will be provided in BS EN 13381-8 for the contribution to fire resistance of structural steelwork from reactive coatings. Moreover, the publication of a further document, BS EN 13381-4, will provide the procedures for boards and non-reactive sprayed systems. The ASFP Yellow Book will be updated to reflect these changes when publication occurs.

Junctions between different fire protection systems for steel

ASFP Technical guidance document TGD 08 provides industry agreed Code of Practice for the junctions between different fire protection coverings to steel. It is an important issue, otherwise any liability may be difficult to establish.

In simple terms, the actions required depends on which product was in situ before the additional system was to be added. Is an intumescent coating to be added next to a board or, non – reactive sprayed coatings, or a different intumescent system? Or is the existing system based on intumescent technology, and a different system to be installed? These issues are fundamentally important to a reliable installation.

ASFP Technical guidance document TGD 10

provides a code of practice for refurbishment and upgrading fire protection of structural steelwork. The refurbishment process can take different directions, either as (a) full replacement (b) partial removal/replacement, or (c) removal and replacement with different system.

Fire protection of steelwork with web openings

Whilst the fire protection of solid steel structure has been well established over the years, new research data can sometimes challenge older practices and this is now apparent for the use of intumescent coatings for the fire protection of 'cellular' beams with circular, lozenge, and/or rectangular web openings.

Because the residual steel post between separate web openings can have different size and shape, the failure temperature and manner of failure in fire can vary as well. The ASFP has addressed this problem in Section 6 of the Yellow Book. New information will be added to provide a protocol for the evaluation of systems suitable for beams with rectangular openings in the steel web.

It is important to recognise that any claims made for the fire protection of 'cellular beams' requires the test and assessment protocol to be followed so that multi-temperature analysis tables can be created for individual reactive coating systems, initially for beams with circular openings and then extended to include rectangular openings. The test data is only valid if the required test protocol has been fully completed

FAQs relating to intumescent coatings

Readers will often have specific application questions, many of which have been transposed into FAQs on the ASFP web site, such as:

- Can intumescent be used to fire protect beams at the heads of compartment walls?
- What is the recommended treatment for steel brackets and angles?
- What clearance is needed for services through beams?
- What about different exposure conditions?
- Can I add intumescent coatings over other types of built-in fire protection?

More information is provided on the web pages of the ASFP at: www.asfp.org.uk

Conclusion

Reputable fire protection products should only be applied by reputable installers with independent third party certification. First party certification practices based on non-accredited arrangements should not be considered as a viable alternative.

All of our lives are threatened by those who give incomplete advice, or misapply data with limited fields of applications. Be on your guard!

IFP

APPROVED



FIRE ALARM CONTROL PANELS
CERTIFIED TO EN54-2/4
LVD, EMC, CPD COMPLIANT



AUTOMATIC EXTINGUISHER PANELS
CERTIFIED TO EN12094-1 & EN54-2/4
LVD, EMC, CPD COMPLIANT



12V & 24V POWER SUPPLIES
CERTIFIED TO EN54-4
LVD, EMC, CPD COMPLIANT

C-TEC is the only UK fire panel manufacturer with third-party product certifications and factory process approvals from the LPCB, BSI and VdS.

Currently trading in over 60 countries worldwide, our commitment to quality is underlined by our ISO 9001 accreditation (held since 1994) and our corporate membership of the Fire Industry Association (FIA).

When it comes to high-quality standards-compliant life safety equipment, you're safe with C-TEC

To find out more call our Sales Desk on +44 (0) 1942 322744
or visit us at this year's International Firex Exhibition



+44 (0)1942 322744



www.c-tec.co.uk

You're safe with



World Leader in Signalling Products

Clifford & Snell is a leading manufacturer of Audible & Visual Signalling Equipment with products servicing international markets for applications ranging from:

Hazardous Area - Industrial - Marine - Fire - General Signalling



GOST-R

ATEX

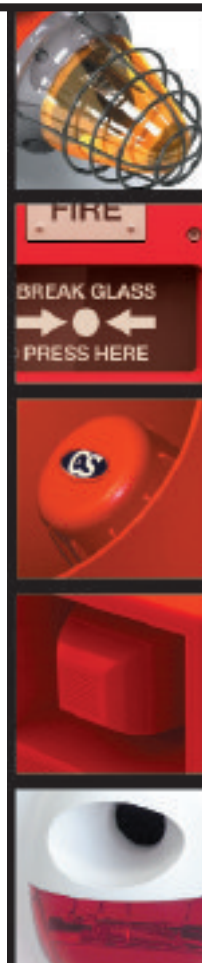


IECEx

For more information about our products and services, please contact:

Clifford & Snell

Tom Cribb Road, Thamesmead, London SE28 0BH, UK. Tel: +44 208 317 1717 Fax: +44 208 317 2400
sales@cliffordandsnell.com www.cliffordandsnell.com





Alarming sense

By Graham Lowe

UK Sales Manager,
Hochiki Europe

There is a tendency to focus entirely on occupant safety when considering fire detection and alarm equipment, overlooking the impact that system selection can have on the performance and safety of firefighters. So, Graham Lowe, takes a closer look at what makes a fire alarm “firefighter friendly”.

The driver behind just about every piece of fire safety legislation is life safety, with the ease and efficiency in which occupants can be evacuated from a burning building being the primary concern. While this is an entirely laudable aim, the decision on what type of fire detection and alarm equipment is selected should surely also take into account the critically important needs of those whose lives may be put in jeopardy fighting the blaze.

Indeed, it is surprising that the impact that system selection may have on the firefighter is not more widely appreciated or taken into account. This is especially so considering the risks that firefighters face on a daily basis and the high regard that society generally has for their courage and professionalism. Perhaps this is because there is sometimes a failure to appreciate that the function of a fire detection and alarm installation does not end with the arrival of the fire brigade? Certainly it is something that we should all give more thought to. With legislation moving increasingly towards fire safety regimes based around risk assessment, the safety of the firefighter is a responsibility that, internationally, is becoming increasingly difficult to shirk – and rightly so.

So, what system features should we be looking for that will make the firefighter’s life safer, and his or her job easier to perform? There are four areas that are worth considering, the technology for which is already widely available. These are: the need for the early detection of a fire; the importance of reducing, if not eliminating, false alarms; fast identification of the location and growth of a fire; and sufficient system versatility to enable the firefighter to influence “on the ground” response to the fire. Let us look at each of these in turn.

Early detection

A view commonly held by firefighters is that the actions taken in the first few minutes of a fire have a significant bearing on its outcome. Put another way, the shorter the delay in detecting and raising the alarm, the greater the prospect of averting a possible disaster.

This has implications both regarding the selection of the most appropriate detection or sensing device and the speed in which the device is activated. So, it is important for owners and occupiers of buildings to ensure that the right sensor or detector is installed – and, of course, maintained –



in the right locations. Far too frequently structural or occupational changes are made to a building without adequately reviewing the siting of detectors or questioning whether the detector is still the most appropriate choice in the newly prevailing circumstances. In short, get this equation wrong and the result might well be delay in detecting a genuine fire.

Eradicating false alarms

Although there is fairly widespread awareness that false alarms are disruptive and costly, it still surprises many to learn that, in the UK alone, there are upwards of 1,000 false alarms every day costing the economy a staggering £1 billion each and every year.

In terms of the impact on firefighters, around half of the calls to the UK's fire and rescue service are unwanted alarms, and many of these are generated by fire detection and alarm systems. For example, of the 13,500 signals from automatic fire alarms in Greater Manchester in 2006, the Greater Manchester Fire & Rescue Service says that less than one percent were actual fires and fewer than half of those required firefighters to use equipment.

This adds a considerable cost burden to municipal fire brigades. Worse, it has the potential for scarce resources to be wasted attending a false alarmed "emergency" that could otherwise be used to have an earlier and possibly safer impact on a real fire.

In the past few years there have been a number of improvements to detection devices that have boosted their reliability and ability to distinguish

between a real fire, environmental pollution and other conditions that might otherwise have initiated a false alarm. An example is Hochiki's Flat Response high performance chamber technology that is incorporated into all of its optical sensors and detectors. This provides the device with the optimum sensitivity to smouldering and flaming fires. Re-engineering and refining the internal optics has enhanced the sensor's or detector's reaction to a wider range of inputs.

Hochiki's ESP – Enhanced System Protocol – analogue addressable open protocol incorporates a suite of false alarm management tools that further enhances immunity from false alarms. This suite is called ARM or Alarm Reduction Management and includes drift compensation that, when activated by the control panel, automatically recalibrates every sensor every 24 hours.

ESP also provides what is called full digital transmission for exceptionally secure signalling, and incorporates checksum error checking to underpin the integrity of the data and ensure reliably correct communication. The protocol also has high immunity from electrical noise, so there are no false alarms due to corruption.

Clear addressability

The characteristics of each type of sensor and detector depend upon the type of fire detection and alarm system that is being installed.

These are commonly referred to as "conventional" or "non-addressable" systems and "analogue addressable" systems. In a conventional or non-addressable installation, the detectors – the term "detector" is usually applied to non-



addressable devices – are in one of two states, either normal or alarm. Individual detectors are not identified or given a specific “address” or location. This type of system tends to be used in smaller buildings. From the firefighter’s perspective non-addressable systems provide little information beyond the fact that a fire has broken out.

Analogue addressable sensors – the term “sensor” being normally used for analogue addressable devices, such as Hochiki’s Enhanced System Protocol – have their own unique “address” number on the system’s control panel. This means that the firefighter can immediately identify the site of a fire and, as other sensors are progressively activated as the fire spreads, track its development. Not surprisingly, these systems are invariably the preferred solution for high-hazard, large or complex buildings, or those with complicated or phased evacuation procedures.

Fire-scene versatility

Fire is not a static event; when the fire brigade arrives it is confronted by a dynamic and often fast developing scenario. Occupants may still be in the building; some may not even be aware that a fire has broken out; and orderly evacuation, possibly by people unfamiliar with the building, will be the firefighters’ primary concern.

Voice alarm systems can play a major role in overcoming some of these obstacles, particularly in shopping malls, leisure centres and hospitals where giving clear directions, zone by zone, on the appropriate course of action that should be taken can be vitally important. Voice alarms can also contribute by informing occupants when not to evacuate. An example of this is following a terrorist explosion, when the safest course of action is possibly to remain in the building, rather than to mass-evacuate, exposing everyone – firefighters included – to the danger of an explosive device

targeted at the building’s fleeing occupants.

Voice alarm systems such as Hochiki’s FIREvac incorporate a prioritise mixer that designates the order of messages played, and ensures that the firefighter’s microphone can override any background music, paging or pre-programmed messages with live announcements. Audio coverage can be enhanced for larger open areas by the addition of up to ten FIREvac slave panels for each FIREvac master panel or zone. These will repeat all of the firefighter’s microphone and digital message broadcasts made at the master panel to which they are connected. Localised control of paging and background music is also possible, as each slave panel has its own paging and background music input.

The on-going challenge

The global trend for more and more buildings to be designed using fire engineering techniques rather than prescribed measures has placed greater responsibility on fire detection and alarm equipment manufacturers to devise ever more reliable, fast and accurate solutions. Building designers are using new materials and pioneering structural techniques, owners are demanding greater in-use flexibility, and occupiers are concerned for their safety in a whole plethora of risk scenarios. To these concerns we must strive to ensure that the firefighter’s needs are also addressed.

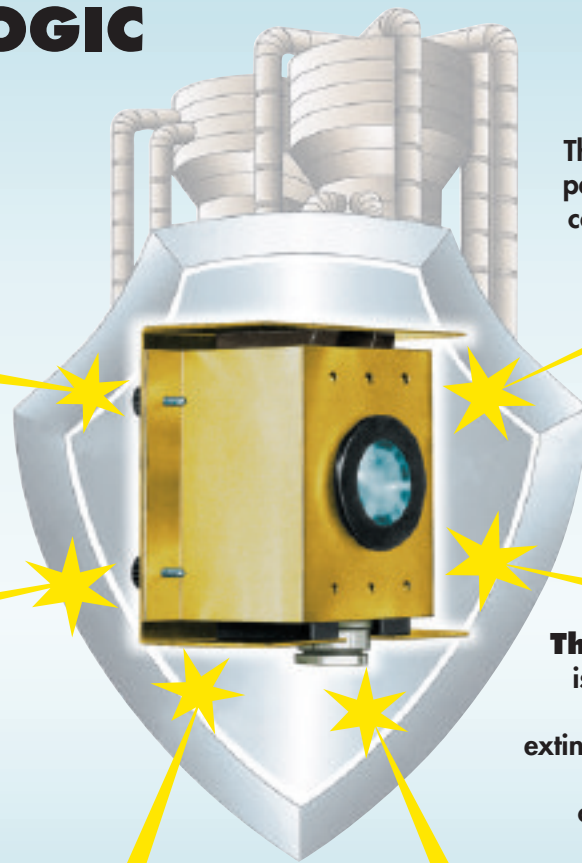
While events such as the terrorist attack on the World Trade Centre in 2001, where 346 firefighters lost their life, are beyond current technology’s ability to influence or control, there will always be men and women prepared to forsake their own safety to rescue others. So, the industry’s role must surely be to provide them with every possible facility to do their work effectively, proficiently and – above all – safely.

IFP

Graham Lowe is UK Sales Manager of Hochiki Europe. He can be reached by telephone on +44 (0)1634 266566, or via email at news@hochikieurope.com. Hochiki Europe’s website is at www.hochikieurope.com

CONTROL LOGIC Spark detector

designed for
dust collection
systems
to protect
storage silos
from the risk
of fire.



**Sparks fly
at high speed.**

They travel at a hundred kilometres per hour along the ducts of the dust collection system and reach the silo in less than three seconds

The CONTROL LOGIC SPARK DETECTOR

is faster than
the sparks themselves.
It detects them with its highly
sensitive infrared sensor,
intercepts and extinguishes
them in a flash.
It needs no periodic inspection.

The CONTROL LOGIC system
is designed for "total supervision".
It verifies that sparks have been
extinguished, gives prompt warning of
any malfunction and, if needed,
cuts off the duct and stops the fan.

ISO 9001

20137 Milano - Via Ennio, 25 - Italy
Tel.: + 39 02 5410 0818 - Fax + 39 02 5410 0764
E-mail: controllogic@controllogic.it - Web: www.controllogic.it



CONTROL LOGIC s.r.l.



BETTER TO KNOW IT BEFORE

Eye is faster than nose.

In the event of live fire
the IR FLAME DETECTOR
responds immediately

CONTROL LOGIC IR FLAME DETECTOR

the fastest and most effective fire alarm device
for industrial applications

IR FLAME DETECTOR
RIV-601/FA
EXPLOSIONPROOF
ENCLOSURE

For industrial applications indoors
or outdoors where is a risk of explosion
and where the explosionproof
protection is required.
One detector can monitor a vast area
and responds immediately
to the fire, yet of small size.



IR FLAME DETECTOR
RIV-601/F
WATERTIGHT
IP 65 ENCLOSURE

For industrial applications indoors
or outdoors where fire can spread
out rapidly due to the presence of
highly inflammable materials,
and where vast premises need an optical
detector with a great sensitivity
and large field of view.

Also for
RS485 two-wire serial line

ISO 9001

20137 Milano - Via Ennio, 25 - Italy
Tel.: + 39 02 5410 0818 - Fax + 39 02 5410 0764
E-mail: controllogic@controllogic.it - Web: www.controllogic.it



CONTROL LOGIC s.r.l.



Engineered solutions demand more from cable manufacturers

By Mark Froggatt

Marketing Services
Manager, Draka UK

Increasingly, fire safety in high-rise, multi-use or high-occupancy buildings and throughout the mass transit sector is dependent upon the reliability of sophisticated emergency lighting and fire detection and alarm systems. In turn, these systems demand cabling that will continue to supply the essential power during a fire. Mark Froggatt explains.

Skylines across the world are increasingly punctuated by buildings that would have been inconceivable a decade or so ago when legislation precisely stipulated how buildings should be constructed. The drift away from this prescriptive approach to design and construction in favour of setting down what should be achieved has seen a transformation in the freedom of expression it has given to architects and the way it has inspired the adoption of new structural solutions. It has also

brought the art and science of fire engineering to the fore.

Not surprisingly, these changes have had their greatest impact in the larger, prestigious projects across the world, such as high-rise city-centre commercial developments, the new generation of huge shopping malls and leisure complexes and the latest airport terminals. This new approach has also had an impact beyond the confines of "iconic" buildings, to embrace hospitals and



universities where the opportunity has been grabbed to construct buildings that are more efficient and versatile than was previously possible.

At the same time as these changes were progressing from the drawing board to bricks and mortar, our fire safety expectations were increasing in line with a universal desire for improved health and safety. So much so that even in structures not overtly influenced by the new thinking, such as in the rail infrastructure, safety expectations were significantly on the rise.

Whatever the driver behind these changes, the result is that the fire safety of occupants and visitors to these buildings has become far more dependant upon the unerring reliability of sophisticated active fire protection measures. This includes

fire detection and alarm systems; smoke venting systems; emergency lighting provisions; electrically-operated fire doors and smoke curtains; firefighting lifts; pressurisation and depressurisation fans; motor-driven smoke control dampers; and pumps for sprinkler systems and wet-risers. In turn, this has spawned an entirely new generation of high-performance cables.

New solutions to new challenges

Among the most prominent of the new cables is Draka's Saffire OHLS halogen-free cable that offers a new and higher level of fire safety performance. Another is Firetuf Powerplus, a new 600/1000V SWA (Steel Wired Armoured) OHLS power cable that provides enhanced circuit integrity performance to meet the demanding requirements of BS 7346-6:2005 (*Components for smoke and heat control systems. Specifications for cable systems*), and the more stringent demands of the UK's Approved Document B (Fire safety) 2006 of the Building Regulations. It also satisfies the insistence of the recently introduced British Standard BS 9999:2008 (*Code of practice for fire safety in the design, management and use of buildings*) that requires the power supply to electrical equipment to continue to operate in the event of fire.

The importance of specifying a OHLS cable is hard to over play. A key feature of this type of cable is that it does not emit halogen gases and burns without producing large amounts of dense smoke. By comparison, under fire conditions, the standard PVC cables used widely in the construction industry emit hydrogen chloride gas, which has a suffocating odour that is detectable in even very low concentrations. Burning PVC cables also generate hazardous volumes of debilitating or disorientating smoke that can easily increase the likelihood of panic and make safe evacuation much more difficult to achieve.

Firetuf Powerplus incorporates high-performance materials that enable it to achieve the maximum 120-minute rating when subjected to the integrated testing of BS 8491: 2008 (*Method for assessment of fire integrity of large diameter power cables for use as components for smoke*



and heat control systems and certain other active fire safety systems). This demanding regime involves flame irradiation exposure, direct impact and high-pressure water spray testing.

Enhanced performance

Currently though, one of the most widely favoured Draka cables is another OHLS cable – Firetufplus. This is an “Enhanced” category cable, as defined in BS EN 50200: 2000 (*Method of Test for Resistance to Fire of Unprotected Small Cables for use in Emergency Circuits*) and BS 8434: 2003 (*Methods of Test for Assessment of the Fire Integrity of Electric Cables*).

While “Standard” cable is acceptable for the majority of installations, Enhanced cable is required in clearly prescribed buildings. In the UK these are: buildings where cables are required to operate longer due to phased evacuation; buildings over 30 metres high that are not protected by sprinklers; buildings with critical signal paths to areas where people may remain for some time during a fire; and buildings where a fire risk assessment identifies the need for enhanced performance.

Recently, this particular cable has been used in a host of buildings with these characteristics. They include the latest addition to the impressive PaddingtonCentral commercial development alongside Paddington Station in London. This 24,619 square metre, glass-fronted structure is one of the UK’s latest skyline landmark office buildings, designed by internationally-renowned architects, Sheppard Robson. Firetufplus was chosen for the fire detection and alarm system in the nine-storey building, which earned the coveted “Excellent” status for its sustainability, the highest achievable BREEAM (Building Research Establishment Environmental Assessment Method) rating.

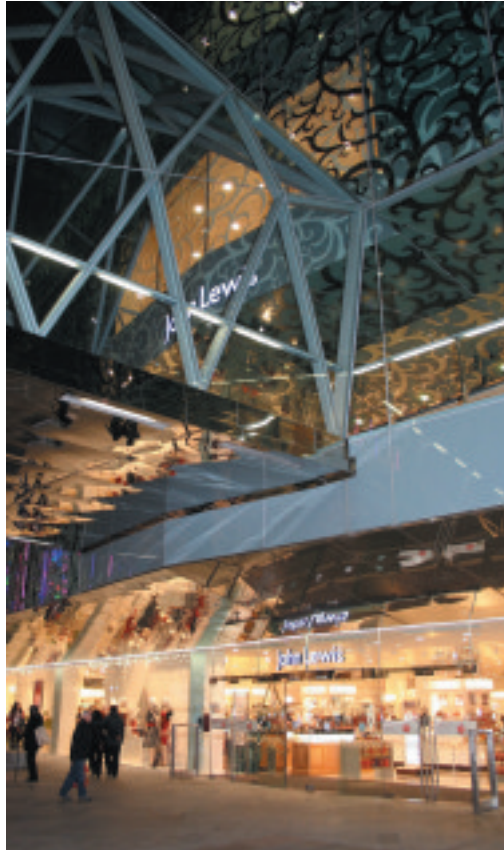
Firetufplus was also selected for the new Highcross leisure and retail destination in Leicester, the largest redevelopment ever to be completed in the city, where it is used for the fully-networked fire detection and alarm system and the public address system that covers all of the centre’s public areas. In the education sector, the same cable was specified for the new Queen Margaret University campus at Craighall in Scotland. Here it is providing essential reliable power to all of the vital life safety and property protection systems throughout the £45 million project that is now home to 4,500 students and staff.

On the Queen Margaret University project, Firetufplus was used in conjunction with another Draka halogen-free cable, Firetuf Power a 600/1000V-rated SWA (Steel Wired Armoured) fire-resistant circuit integrity energy cable. However, on another Scottish project, the new £100 million Victoria Hospital in Glasgow, it was used alongside Draka’s Saffire cable.

Infrastructure projects

Firetufplus has also made its mark on major infrastructure projects.

It was used to provide dependable power for the emergency lighting in the main terminal building and the terminal satellite building at the recently opened Terminal 5 at Heathrow Airport in London, the largest freestanding building in the UK and, at the time, Europe’s largest construction project. This overturned an earlier decision to use



mineral insulated cables, as Michael Cowell, Technical Development Manager for BAA, explains: “With the more stringent requirements for fire performance cables as set out in BS 5839-1:2002, we assessed all of the Enhanced-category pliable cables on the market and decided that Draka’s Firetufplus fully met our quality and safety requirements.”

The project was a landmark for Draka, as the company also devised a new EMC (electromagnetic compatibility) cable especially for the integrated fire alarm, voice alarm and public address system in the terminal. This cable, Firetuf EMC, satisfied the need for a high level of electromagnetic immunity, and has proved so successful that it has since been added to the standard Draka cable offering.

The rail and road infrastructure elements of the £4.3 billion project used Draka’s Firetuf Connecta modular wiring system. This included Network Rail’s tunnel for the Heathrow Express rail extension into central London, Tube Lines’ tunnel for London Underground’s extension to the Piccadilly Line, and the new terminal’s airside roads. This is the same cabling system that has been used on a number of high profile infrastructure projects around the globe, such as the Mass Rapid Transit system at the Changi Airport extension, the Victoria Line extension in Singapore, the HS1 – High Speed 1 – rail link between London and Paris, the Dublin Port Tunnel, and the London’s Docklands Light Railway extension.

Other recent examples of projects where Draka cable has been installed include Motor City in Dubai, the world’s first F1 theme park; the Dubai Mall, believed to be the world’s largest shopping and entertainment destination; and the impressive new Dubai Cricket Stadium.

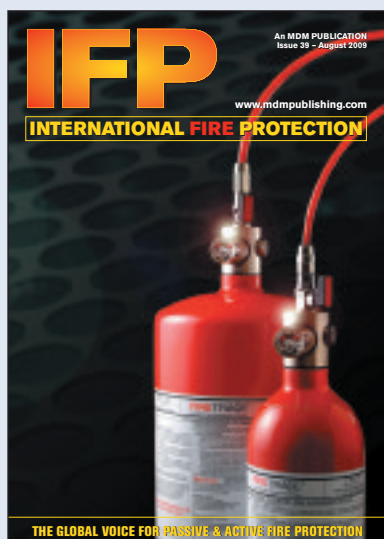
IFP

Mark Froggatt is Marketing Services Manager at Derby-based Draka UK. He can be reached on +44 (0) 1332 345431 or via email at caleuk@draka.com. The company’s website can be found at www.drakauk.com

SUBSCRIPTIONS

INTERNATIONAL FIRE PROTECTION

GET YOUR SUBSCRIPTION NOW!!!



**IFP IS PUBLISHED 4 TIMES A YEAR
– FEBRUARY, MAY, AUGUST AND
NOVEMBER**

Name: _____

Company/Organisation: _____

Address: _____

Telephone: _____

Fax: _____

E-mail: _____

Start Subscription from Issue: _____

Subscription Rates: UK £50.00 Europe €60

Rest of World US \$70.00

Back Issues: US \$18.00, £10.00 or €15 each inclusive
of P&P (subject to availability)

METHODS OF PAYMENT:

Website Subscription: www.mdmpublishing.com

Cheque: _____ MDM Publishing Ltd.

Visa/Mastercard No: _____

Expiry Date: _____ Security Code: _____
(last three digits on reverse of card)

If paying by credit card please fax details. DO NOT post/mail.
Fax: +44 (0) 1935 426926

MDM Publishing Ltd.

The Abbey Manor Business Centre, The Abbey, Preston Road,
Yeovil, Somerset BA20 2EN, United Kingdom

ADVERTISERS' INDEX

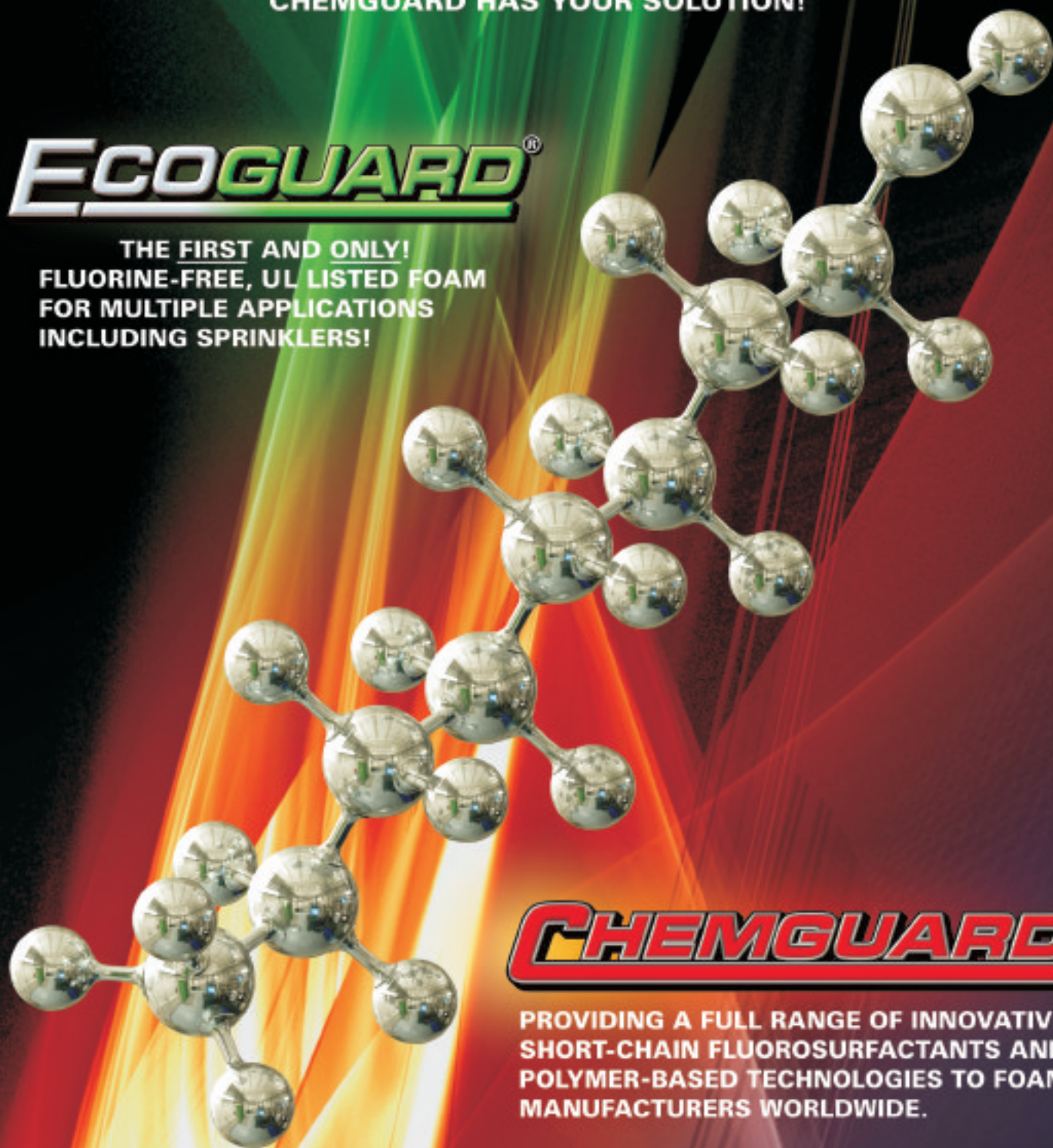
Chemetron	OBC
Chemguard	IBC
Clifford & Snell	72
Control Logic	76
Cooper Fulleon	17
Cranford Controls	22
CTEC	72
Dafo Fomtec	68
Danfoss Semco	45
Detector Testors	17
Dr Sthamer	35
Draka	IFC
Dynax	32
Eaton Cutler Hammer	27
Essex Fluid Controls	52
FFE	19
Firetrace	64
Flexhead Industries	60
Furnace Construction	52
Gielle	21
Halon Banking Systems	4
IWMA	42
Kingspan	7
Minimax	45
NFPA	31
OCV	63
Patterson Pumps	28
Reliable Fire Sprinkler	56
Securiton	52
Sensitron	19
SPP Pumps	22
St Gobain Vetrotech	36
Tyco FSBP	51

PROBLEM SOLVED!

FROM FLUORINE-FREE FOAM TO SHORT-CHAIN FLUROSURFACTANTS
CHEMGUARD HAS YOUR SOLUTION!

ECOGUARD®

THE FIRST AND ONLY!
FLUORINE-FREE, UL LISTED FOAM
FOR MULTIPLE APPLICATIONS
INCLUDING SPRINKLERS!



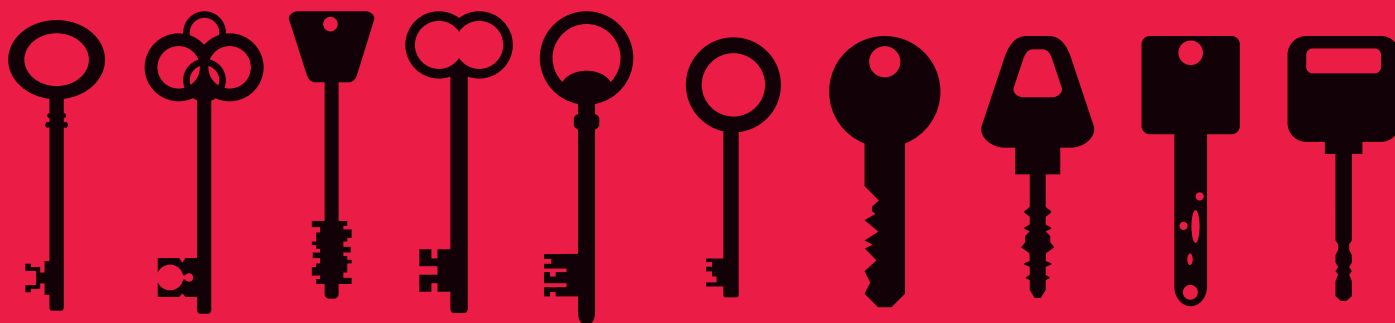
CHEMGUARD®

PROVIDING A FULL RANGE OF INNOVATIVE
SHORT-CHAIN FLUROSURFACTANTS AND
POLYMER-BASED TECHNOLOGIES TO FOAM
MANUFACTURERS WORLDWIDE.



CHEMGUARD - 204 South 6th Avenue, Mansfield, Texas USA 76063
OFFICE: 817.473.9964 FAX: 817.473.0606 www.chemguard.com

ON CALL 24/7:
800.222.3710



Every industry needs a unique fire protection solution



The Key to Worldwide Protection.

Chemetron Fire Systems offers the widest range of fire protection solutions to suit your needs. Protecting your most vital assets and operations is our mission and passion. Including low pressure CO₂, water mist, Argonite™, 3M™ Novec™1230 fire protection fluid and FM-200®; our systems protect the assets most vital to you — data centers, power generation facilities, milling applications, LEED certified projects as well as other high value business systems, to name just a few.

With project management, installation and service Chemetron is the one manufacturer that can unlock the solution to all of your fire protection challenges.

Backed by *our* experience. Focused on *your* future.

With over 70 years of experience, let Chemetron provide the key to your unique challenge. Call us today at 708-748-1503 ext 411, or go to: www.chemetron.com

CHEMETRON
Fire Systems™

A UTC Fire & Security Company



IFP

An MDM PUBLICATION
Issue 40 – November 2009

www.mdmpublishing.com

INTERNATIONAL FIRE PROTECTION

THE GLOBAL VOICE FOR PASSIVE & ACTIVE FIRE PROTECTION

NEW - FIRETUF POWERPLUS

Enhanced power cable performance to meet BS 7346-6 and BS 7846.

BS 5839-1: 2002

Firetuf is approved to the highest standards, providing superior flame retardance and circuit integrity.

NON MELT AND DRIP

Firetuf products will not propagate and cause secondary fires.

EASY STRIP

Firetuf provides the fastest ever sheath removal, allowing reduced termination times.

ZERO HALOGEN LOW SMOKE

Our OHLS cables are manufactured to deliver optimum performance across a range of applications.

FUTURE PROOF

Concerned about new fire safety legislation? Relax, the Firetuf range is the highest standard cable available today.

AS FIRETUF AS THEY COME

Firetuf® from Draka is the ultimate circuit integrity cable. Manufactured and approved to the highest standards, Firetuf delivers unbeatable benefits to specifiers and installers of fire engineering systems. And with our brand new Firetuf Powerplus range of power cables, delivering enhanced performance to meet BS 7346-6 and BS 7846, you can trust Draka to provide the complete solution to all your specialist cable needs. To find out more call 01332 345431 or visit our website www.drakauk.com



Draka

The world's most trusted cable brand

Draka UK Limited, P.O. Box 6500, Alfreton Road, Derby, DE21 4ZH, UK
Tel: +44 (0)1332 345431 Fax: +44 (0)1332 331237 email: firetuf@draka.com www.drakauk.com

IFP/Firetuf/1109

November 2009
Issue 40



Front cover picture courtesy of The Reliable Automatic Sprinkler Co, Inc.

Publishers

Mark Seton & David Staddon

Editorial Contributors

Wilf Butcher, Graham Ellicott, Mike Wood, Randy Clark, Kevin Kenny, Steve Robinson, Mark Froggatt, Graham Collins, Jim Creak, Ian Buchanan, Thomas Multer, Dr Wolfram Krause, Nils Falter, Anna Maria Mrcela

IFP is published quarterly by:

MDM Publishing Ltd
The Abbey Manor Business Centre,
The Abbey, Preston Road,
Yeovil, Somerset BA20 2EN
Tel: +44 (0) 1935 426 428
Fax: +44 (0) 1935 426 926
Email: dave.staddon@ifpmag.com
website: www.ifpmag.com
©All rights reserved

Annual Subscription

UK – £50.00 Europe – €60
Overseas – US\$70.00
ISSN – 1468-3873

DISCLAIMER:

The views and opinions expressed in INTERNATIONAL FIRE PROTECTION are not necessarily those of MDM Publishing Ltd. The magazine and publishers are in no way responsible or legally liable for any errors or anomalies made within the editorial by our authors. All articles are protected by copyright and written permission must be sought from the publishers for reprinting or any form of duplication of any of the magazines content. Any queries should be addressed in writing to the publishers.

Reprints of articles are available on request. Prices on application to the Publishers.

Page design by Dorchester Typesetting Group Ltd

Printed in the UK

Contents



15-20



22-31



35-37



45-47

3-12 News & Product Profiles

15-20 New approaches to fire safety design

21 High Standards Needed for Fire Protection Systems in Today's Buildings

22-31 Fire Alarm Panels Round Up

32-33 Are you 'safe in the knowledge'?

35-37 Industrial Flame Detectors for High-Risk Plant Protection

39-42 Coming Clean on Fire Suppression

45-47 Sprinkler Protection of Storage Facilities

49-51 The common language for safety communication that can bring world harmony!

52-53 Fire extinguishers

55-57 Shopping for the Right Cable Solution

58-61 Cost Effective Gas Detection

63-65 Selection Considerations for Clean Agent Fire Suppression Systems

67-70 Firestopping – A Shared Responsibility

72 Advertisers' Index



52-53



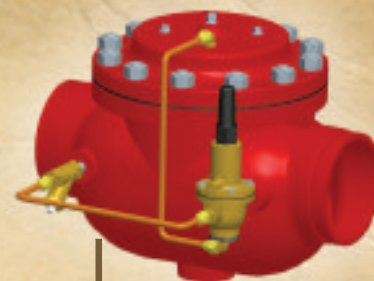
55-57












63-65



67-70



2009
129FC
Pressure
Reducing

- 2003  108fps
Pump Suction
Control
- 1996  116FC
Pneumatic/
Hydraulic Deluge
-  127-45NR
Fire Flow Bypass
- 1986  127-3FC
Pressure Reducing
- 1983  108-2hp
High Pressure Fire
Pump Relief
- 1980  108FCA
Fire Pump Relief
- 1974  3331
One Way Altitude
-  65FC
OCV enters the
fire market
- 1952  OCV Founded

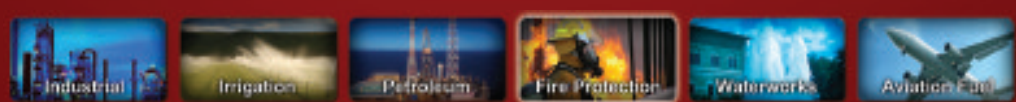
283.5

In today's business climate, we believe a company should be held accountable by more than just regulations and government entities. At OCV, we answer to you-the customer-and you expect a high standard, demand solutions that work, and insist on products of quality.

We also believe in longevity and commitment. Our Sales and Engineering teams offer new talent combined with seasoned professionals for a sum of over 283 years of experience. With companies failing and economic conditions changing overnight, isn't it nice to know you will get an answer every time you need help with an application?

OCV wants to be your partner for managing fluid application needs – large or small. OCV continues to develop its broad spectrum of technical expertise, turning field experience and problem solving knowledge into a refined offering of services and state-of-the-art product.

At OCV we put customer service at the top of our list. Our slogan says it best: Global Performance. Personal Touch.



Sensitron: the new SIL-ATEX and car park gas detectors

Year 2010 will be reach in novelties for SENSITRON's clients: at Sensitron srl we are ready launch a full range of new gas detectors and control panels with innovative features.

A first remarkable novelty is the innovative SMART "S" line of SIL 2 (3) rated gas detectors, ideal for monitoring flammable and toxic contents in harsh environments.

SMART "S" are available with Infrared sensors, Pellistors and Electrochemical cells and the most prestigious novelty here is represented by SMART SM-2, capable of fitting two sensing elements inside a single sensor head (catalytic and infrared), to allow two independent sensor outputs to be confronted: this provides users



with a higher accuracy and minimised false alarm ratio.

SMART "S" features:

- Single and Double sensor technology integrated in the same sensor
- Single or double 4-20 mA 3-wire output and 3 relay output
- HART communication interface (optional)
- Non-intrusive one man calibration (via 8-digit display or IrDA interface)
- Back-lit 8-digit display and 5 mode status LEDs
- RS485 serial communication Modbus and Proprietary protocol dedicated to Galileo SIL 3 panels
- Wide range of accessories for installation and maintenance
- Ongoing system self diagnosis
- ATEX IIG and SIL 2 (3) certified (EN50402)

Tyco Launches New G-Press™ Piping System

TYCO FIRE SUPPRESSION & BUILDING PRODUCTS has launched the latest enhancement to the extensive Grinnell® grooved piping products offering – the G-PRESS™ Piping System that is suitable for all types of sprinkler fire protection installations. It is aimed at meeting the market's growing demand for quicker, more precise sprinkler pipe installation and the increasing expectation of improved site safety and security.

The cost, time and labour-saving advantages of press systems over traditional solutions, such as black steel and threaded fittings, have long been recognised in the heating and plumbing sectors. However, until now, these have not been available for sprinkler installations. The G-PRESS Piping System requires only a press tool to complete the installation, and takes up far less space than traditional threaded, welded or flanged systems. Another bonus is its light weight. G-PRESS is up to 50 percent lighter when compared with traditional threaded piping systems.

The absence of high heat and flames from welding torches is a major safety plus and, significantly, the reliability and dependability of G-PRESS is underpinned by its being tested and approved by major fire protection approval bodies. The new system can be used in hazardous areas, without any special precautions being necessary; installation does not generate hazardous fumes in the working area; and there is no possibility of foreign materials being introduced into the pipeline.

The key components of the new piping solution are the G-PRESS fittings and fitting connection, and the G-Press PLM [passive leak monitoring] sealing ring. G-Press fittings are made from either stainless steel or galvanized carbon steel, which is protected against external corrosion by a zinc layer. The fitting connection



The G-PRESS™ Piping System is the latest enhancement to the extensive Grinnell® grooved piping products offering

between the sprinkler tube and the fitting is created by pressure using a G-PRESS pressing tool. The packing sleeve is deformed and adapts to the surface of the tube that is then, in turn, pressed against the PLM sealing ring on the surface of the fitting. This provides highly effective sealing and prevents the tube from slipping out.

The G-PRESS Piping System is backed by a ten-year limited warranty, and G-PRESS data is available on the Tyco SprinkCAD™ fire protection design software to assist sprinkler installation designers. G-PRESS components are approved by FM [Factory Mutual] and VdS [Verband der Sachversicherer].

A copy of the new fully-illustrated G-PRESS Piping System catalogue and further information on G-PRESS is available from Tyco Fire Suppression & Building Products by telephone on +44 (0) 161 875 0402, by fax on +44 (0) 161 875 0493, or via email at marketing@tyco-bspd.com. The website address is www.tyco-fsdp.com



Another important novelty is represented by the new range of gas detectors and control panels designed to meet with the specs of the new European Standard for the gas detection in car parks.

The SMART 3-P gas detector may employ catalytic sensor or electrochemical cells of the highest quality, able to grant an excellent linearity and accuracy, besides an estimated operational lifetime of 4 years.

They allow the detection of CO or CO+NO₂ and flammable gases and offer 2 different output:

- Proportional 4-20mA output
- Serial RS485, Modbus or Proprietary protocol, to communicate with SENTOX IDI and MULTISCAN++ control panels.

We invite readers to contact us at sales@sensitron.it for any further information they might need on our products.

Website: www.sensitron.it

Latest Industrial Flame Detectors from Spectrex

The SharpEye 40/40 Series Flame Detectors offer unmatched performance and reliability – including IR3 (Triple IR) & Multi-Spectrum detectors that enable detection of small hydrocarbon fuel and gas fires at long distances, with enhanced immunity to false alarms. These highly specified detectors operate reliably in the harsh conditions of offshore drilling and production platforms, FPSO vessels, fuel loading and storage facilities, LNG and LPG plants and petrochemical plants throughout the world.



The 40/40 Series includes the model 40/40I, which uses well-proven IR3 detection technology, offers the highest immunity to false alarms combined with a massive 65m (215ft) detection distance with an enlarged cone of vision – 100° horizontal and 95° vertical.

Another major benefit is the improved response to gas flames (methane, LNG, LPG etc) where small gas flames can be detected at distances of up to 30m (100ft). An important addition is the model 40/40M Multi IR detector, which can simultaneously detect 'invisible' hydrogen flames at 30m (100ft) and hydrocarbon fires at 65m (215ft).

The 40/40 series comprises many detection techniques to suit every situation including Triple IR (IR3), Multi IR, combined UV/IR, single IR or UV. Thus, Spectrex can offer truly unbiased advice on which detector is the correct solution to your detection needs.

The compact and lightweight design (only 2.5kg in stainless steel) offers low-power consumption with a heated lens for continued availability in difficult environments – as well as the reassurance of 3rd party EN54-10, FM3260 and DNV performance approvals and IEC 61508 – SIL2 (TUV) certification to assure reliability. All detectors are, of course, Ex approved to ATEX, IECEx, FM/CSA, GOST R and GOST K standards for Zone 1/21 hazardous area location.

The certified operating temperature range has also been extended. The detectors will now operate reliably in temperatures from -55°C to +75°C (with an option for +85°C) allowing their use anywhere in the world.

The 40/40 Series offers many interface options to ensure that the detectors are compatible with all control and fire detection systems – outputs include 0-20mA, dry relay contacts, RS-485 ModBus and HART. Detectors are programmable, allowing factory default settings to be altered pre-delivery or post-installation.

For more information, email spectrex@spectrex-inc.com or visit the website at www.spectrex-inc.com

Avon Protection introduces the world's smallest NIOSH CBRN escape hood

AVON PROTECTION has launched the world's smallest NIOSH certified CBRN Air Purifying Escape Respirator into its extensive product range.

The NH15 provides instant protection in a CBRN incident and has been designed specifically for police, emergency medical services and fire officers.

The hood has a five year shelf life and provides a high level of respiratory, eye and face protection for a minimum of fifteen minutes to allow the user to evacuate from a contaminated area.

Made of clear material, the NH15 not only protects against all airborne CBRN threats but also protects the face from liquid agent splashes.

The clear material gives a non threatening appearance, aids with recognition and also allows for superior visual communication.

Twin low-profile filters on a unique hinge system feature the latest filtration media which reduces breathing resistance and a front reflector makes it easier to identify colleagues in low light environments.

The hood, which has recently been awarded full certification against the NIOSH Air Purifying Escape Respirator (APER) standard, requires minimal training and can be deployed effectively in under 30 seconds, aided by the self adjusting harness.

The NH15 comes vacuum sealed in a foil bag and is protected by a durable reinforced pouch small enough to store in a briefcase, glove



compartment or drawer.

The single use device can also be carried on a utility belt or be thigh mounted and unlike conventional respirators does not require annual OSHA specified fit testing.

Matt Evans, Sales & Marketing Director, Avon Protection, said: "Avon is excited to gain NIOSH approval for the NH15 Escape Hood and to provide first responders with this compact protection solution against the increasing terrorist threat. Emergency response personnel are vulnerable because it is impractical to carry a traditional respirator or

breathing apparatus at all times, but due to the minimal size of the NH15, first responders are now presented with a solution that can be easily transported and quickly deployed in a CBRN incident."

The NH15 compliments Avon's range of escape devices. Included in the portfolio is the EH20 emergency hoods which is CE approved and specifically designed to protect users against CBRN agents. It provides a high level of respiratory, eye and face protection for up to 20 minutes to allow sufficient time to escape from a contaminated area.

For further information on these and other key respiratory equipment, please visit www.avon-protection.com

Det-Tronics, Releases Versatile Display/Communicator for Gas Detectors

FlexVu® Universal Display reduces spares inventory and simplifies operation

The FlexVu® Universal Display, from DETECTOR ELECTRONICS CORPORATION (DET-TRONICS), is a life-safety display/communicator that provides non-intrusive calibration, local event logging, and third-party performance certifications (<http://flexvu.det-tronics.com>). This display/communicator reduces spare-parts inventory by working with a wide spectrum of toxic and combustible gas sensors and by operating with industrial communication protocols such as HART® and Modbus.

Because the FlexVu Universal Display provides non-intrusive magnetic calibration and configuration, a single person working alone can calibrate gas detectors without declassifying a hazardous area. In addition, the FlexVu display has been third-party performance tested and certified to FM, CSA, and ATEX/IEC. Its reliable construction has an explosion-proof rating and is approved for use in Class I, Division 1, Groups A, B, C, and



The new Det-Tronics FlexVu display (shown here with the recently released GT3000 toxic gas detector) is a life-safety display unit that provides non-intrusive calibration, local event logging, and third-party performance certifications

D classified hazardous areas for all gas types.

"The FlexVu intuitive menu structure simplifies operation by enabling quick device set up and easy access to sensor status information including local alarm and event logs," said Mike Bragg, Product Marketing Manager at Det-Tronics. "Plus users will like the backlit, heated LCD that clearly displays

gas concentration, and alarm and fault status."

Taking advantage of its flexible installation options, users can couple the FlexVu display directly to a single sensor or place it remotely using a sensor termination box. Outputs include analog 4-20 mA with HART, three alarm relays, one fault relay, and RS-485 Modbus. In its current release, the FlexVu UD10 display operates with the following Det-Tronics gas detectors/sensors (additional gas and flame detectors will soon be added):

Combustible gases

- PointWatch IR (PIR9400)
- PointWatch Eclipse® IR (PIRECL)
- Open Path Eclipse IR (OPECL)
- Catalytic Combustible Sensor (CGS) via the 505 transmitter

Toxic gases

- Nanotechnology Metal Oxide Semiconductor (NTMOS) hydrogen sulfide sensor
- Electrochemical sensors (C706x Series and GT3000)

For more information please visit flexvu.det-tronics.com

Fire & Gas Safety Systems

Simplify Gas Detection



interactive display for all types of gas detection

non-intrusive calibration via simple menu structure

third-party tested to performance standards



**FlexVu®
Universal Display**

flexvu.det-tronics.com

DET-TRONICS®

A UTC Fire & Security Company

The Interschutz is coming!!

Scores of new attractions and innovations form backbone of INTERSCHUTZ 2010

Over the six days of INTERSCHUTZ 2010, Leipzig will serve as the world capital for firefighters from across the globe. Running from 7 to 12 June, the international exhibition for rescue services, fire prevention, disaster relief and safety/security will take place in five halls as well as on the open-air site at the Leipzig Exhibition Center. As at INTERSCHUTZ five years ago in Hannover, the organizers at Deutsche Messe are anticipating over 1,000 exhibitors and attendance of considerably more than 100,000. A ratio of more than 90 percent trade visitors makes INTERSCHUTZ the ideal platform for generating business leads and deals — all the more so since the 28th German Firefighting Convention has been scheduled to run concurrently in Leipzig.

A full nine months before opening day of the event, just under 900 exhibitors from 42 nations had already registered for INTERSCHUTZ, underscoring the event's strong international appeal. With more than 430 registered exhibitors so far, Germany has the strongest contingent, followed by China, the United States, Italy and the United Kingdom. First-time exhibiting nations at next year's event include Australia, Hong Kong and Peru. The amount of display space occupied by foreign exhibitors is up 15 percent for the upcoming event. The concept of developing INTERSCHUTZ into the international exhibition for rescue services, fire prevention, disaster relief and safety/security has thus been fully validated.

A major focus at the show will be on rescue services and fire prevention, which have already registered strong exhibitor growth. Additional growth has come in the area of measuring and detection equipment.

Innovations and trends highlighted at INTERSCHUTZ 2010

The upcoming INTERSCHUTZ in June 2010 will present the current state of the art as well as the latest trends for fire prevention and disaster relief, including ultra-modern vehicles equipped with sophisticated, specially tailored communication and navigation systems as well as mission control centers that can directly transmit video images of the blaze or disaster site to vehicles underway. A special focus will consist of how rescue robots and drones can relieve crews, issue warnings and protect people in dangerous situations; they are also capable of monitoring hazardous zones and large areas. This field will also be thoroughly explored at a two-day, international fire prevention symposium, organized by the German Fire Protection Association (vfdb) and covering the latest

developments in fire risk analysis and prevention.

The area of "rescue services" will be even more strongly represented at next year's INTERSCHUTZ. At the most recent event in Hannover five years ago, some 40,000 visitors reported having a particularly strong interest in this field. At INTERSCHUTZ 2010, exhibitors from the "self" and "outside" rescue service sector will be located primarily in halls 2 and 3 as well as on the open-air site. Here, too, the number of exhibitors has gone up.

Big-name manufacturers of emergency and medical ambulances will also be back for the upcoming INTERSCHUTZ. All the major emergency relief organizations will be on hand to demonstrate their high level of expertise and training — including their perfect command of state-of-the-art medical technology and sophisticated electronic equipment. This part of the show will also be backed up by a comprehensive supporting program. At the German Rescue Services Conference, the focus is on hygiene, organizational tactics, pandemic planning and rescue squad training. The conference will once again focus on issues of direct interest to the work of rescue assistants and emergency physicians. This time the conference will clearly differentiate between medical and organizational-technical themes, staging the relevant presentations in separate auditoriums.

High-caliber supporting program

The important role of INTERSCHUTZ will be underscored by a high-caliber supporting program consisting of forums, workshops, special events and live demonstrations on the open-air site. INTERSCHUTZ offers a unique mix of commercial and non-commercial exhibitors for maximum synergy effects. Exhibitors will be displaying the latest technologies, trends and services from the areas of protection and prevention, rescue work and defense, contingency planning and organization, making INTERSCHUTZ the No. 1 international event for anyone involved in fire prevention, disaster relief, rescue services and safety/security. Further information is available at www.interschutz.de/events and www.vfdb.de

IFP



For more information contact:

Andrea Staude

Tel: +49 511 89-31015

Email:

andrea.staude@messe.de

Further information as well as digital images are available for downloading at www.interschutz.de/pressservice



the standard in safety

Underwriters
Laboratories

There's a reason
we've been a leader
in product safety
testing & certification
for over 100 years.

Trust.

Trust... that UL has unmatched technical expertise in product safety testing and certification.

Trust... that the UL mark is backed not by a piece of paper, but by the integrity, quality, experience, commitment and consistency that stands behind it.

Remember, UL has been testing and certifying fire resistance, life safety and security products for over a century.



To learn more about Underwriters Laboratories and how you can leverage our global expertise in the fire resistance, life safety and security industries on a local basis:

T:: +44 (0) 1 483.402.032 / E:: Fire&SecuritySales.EULA@uk.ul.com / W:: ul.com

50% increase in demand for Firetrace® “Micro Environment” Protection

ISO 9001:2008 registered Firetrace International has reported that, in the past year, successfully completed installations of its FIRETRACE® automatic fire suppression system have increased by 50 percent to a global tally of 150,000, underpinning the company’s claim to be the pre-eminent provider of fire protection for core mission-critical, micro-environment assets.

This, in part, is attributed to the fact that Genuine FIRETRACE remains the only UL (Underwriters Laboratories) listed, FM (Factory Mutual) approved and CE (Conformité Européenne or European Conformity) marked tube-operated system in the world – bar none – that is tested as an automatic fire detection and suppression system.

According to Nick Grant, EMEA Vice President and General Manager, this success reflects industries’ growing awareness of their dependency on costly and difficult to replace key assets, and the need to protect these with a solution that is third-party proven to meet the most exacting international standards. He comments: “In the past year, we have seen more and more companies dismiss untested look-alike systems in preference for genuine FIRETRACE. I believe this is a reflection of the growing worldwide campaign to outlaw a whole host of counterfeit fire safety products.”

In the past couple of months the company has successfully exhibited at the European Offshore Wind exhibition in Sweden, Fire India in Mumbai, the EMO machine tool exhibition in Italy and, most recently, at the Busworld bus and coach exhibition in Belgium.

“These exhibitions reflect the growing diversity of applications for FIRETRACE,” says Nick Grant. “While electrical cabinets are where FIRETRACE is most frequently to be found, the list of applications includes: on-shore and off-shore petrochemical control centres; wind energy turbines; ventilation and air conditioning plant; IT server enclosures, UPS equipment, cable trays and remote telecommunications applications; and on-road and off-road vehicle engine and generator compartments;.” The mass transit sector – particularly rail and air transport – is today one of Firetrace International’s key market sectors, as are manufacturing industries with applications in machine tools, dust and mist extraction, and fume cupboards and analytical equipment in pharmaceutical companies.”

Among its many benefits, genuine FIRETRACE provides reliable, around-the-clock, unsupervised protection that requires neither electricity nor external power. It also requires neither manual activation nor monitoring, virtually no maintenance, and can be fitted as a new-build installation or retrofitted to existing micro-environments

in a matter of hours.

The system comprises an extinguishing agent cylinder that is attached to technically-advanced proprietary Firetrace Detection Tubing via a custom-engineered valve. This leak-resistant polymer tubing is a linear pneumatic heat and flame detector that is designed to deliver the desired temperature-sensitive detection and delivery characteristics. It can be routed throughout the areas to be protected and, when the tubing is exposed to heat and radiant energy from a fire, it ruptures instantly and immediately directs the suppression agent at the source of the fire.

The latest headline-grabbing FIRETRACE contracts have included providing up to 900 systems to protect vital electrical cabinets on the new Delhi Mass Rapid Transit network that, when the project is completed in 2020, will be longer than that of London Underground. Another major contract in India was for the supply of more than 1100 FIRETRACE systems to safeguard electrical control cabinets at Delhi International Airport’s new Terminal Three building.

Middle East projects have included 400 FIRETRACE systems that are now providing protection for critical electrical control panels for Qatar’s Ministry of Drainage Affairs’ Doha South STW (Sewage Treatment Works) project. Other projects in the region were for IT server protection for Riyadh-based air conditioning, heating and refrigeration specialist, the Alessa Group, electrical control cabinets at the new African-themed Nofa Resort in Tebrak, and for the Al Jazeera media conglomerate in Saudi Arabia.


Genuine FIRETRACE is available only via Firetrace International’s global network of authorised distributors. These professionally-minded trading partners are skilled in hazard analysis, experienced in agent and system selection, and trained in installation, commissioning and support. They also use only genuine FIRETRACE components. **IFP**



For further information please contact:
Nick Grant
Firetrace International
which is headquartered in Scottsdale, Arizona USA. He can be reached at the company’s EMEA offices in Gatwick in the UK by telephone on +44 (0) 1293 780390 or via email at grant@firetrace.com. The company’s website is at www.firetrace.com

ONLY FIRETRACE IS FIRETRACE

OTHER TUBE-BASED SYSTEMS
CLAIM TO BE LIKE FIRETRACE.
THEY ARE NOT.



**INSIST ON GENUINE
FIRETRACE SYSTEMS
FOR PROVEN FIRE
SUPPRESSION.**

+ Only FIRETRACE INTERNATIONAL manufactured Systems offer extensively tested Firetrace branded solutions with listings and approvals[†] from CE, FM, UL, ULC and more than 25 other international agencies.

+ Only FIRETRACE INTERNATIONAL has 20 years of experience with more than 65,000 systems protecting equipment worldwide

+ Only Genuine FIRETRACE SYSTEMS have the tested and proven reliability you and your customers require

Never compromise your reputation by using impostor, untested and unapproved systems – be sure you are using genuine Firetrace.

FIRETRACE®
AUTOMATIC FIRE SUPPRESSION SYSTEMS

Call +44 (0) 1293 780390 (Europe, Middle East, Africa)
or +1 480 607 1218 (US and elsewhere) or e-mail info@firetrace.com
to see why Firetrace is the right solution for your fire protection needs.

www.firetrace.com
www.firetrace.eu



Firetrace® is a registered trademark of Firetrace USA, LLC / Firetrace Ltd. All unauthorized uses of the Firetrace trademark shall be prosecuted to the fullest extent permitted by the law.

* The Firetex, FireDeTec, and Firetec brands are the property of their respective owners, and are not the property of Firetrace.

[†] Listings and Approvals vary by system and agent.

Ticking all the right boxes . . . the new fire alarm system from VES

Kentec Electronics Ltd Technical Director Robert Jefferys explains how the new VES Elite fire alarm system ticks all the right boxes.

The diverse range of UL and FM listed components that comprise the Elite fire alarm system from VES make it uniquely positioned to provide a diverse range of fire systems from small retail outlets or restaurants to high rise or campus wide systems of great complexity. This simple but comprehensive range has everything needed to enable modern fire alarm systems to be engineered and installed to the latest standards.

Scalability

All control panels in the Elite range can be effective as a stand alone fire system or participate in a complex network of panels by the simple addition of a fault tolerant Network Interface Card. The resultant secure, fault tolerant network is configurable in any desired combination of peer to peer or master/slave combinations for maximum flexibility.

This flexibility allows any size of system to be simply engineered using a set of simple but powerful common components and software tools. Whether the project is a simple and straightforward retail outlet fire alarm or multi-panel network with complex building control functions the Elite system can be tailored to meet the requirements.

Such an approach has many benefits including those associated with training and system engineering, reduced stock holding and ease of maintenance and servicing due to many common parts.

The simple approach of the Elite system does not make it any less capable than any other fire alarm system. The Elite system is fully capable of realizing a distributed fire system with up to 500 zones, 32000 addressable points, text only and/or graphical annunciators and a further 32000 programmable input/output points via a range of I/O boards specifically designed to maximize the systems capabilities.

Serial data interfaces at each panel offer further scope for integration into BMS systems, printers, pagers of the powerful Guide PC based graphics system.

Flexible programming

System configuration could not be simpler.

The Elite's Windows® based, Elite Explorer



configuration utility allows even the most complex of systems to be easily configured with powerful, network-wide, cause and effect relationships.

Using a familiar graphical user interface, the Elite Explorer configuration utility is widely recognized as setting the standard for a simple yet powerful fire system configuration tool. Its simple and intuitive drag and drop style of interface has been setting the standard for such tools for several years and the latest release offers more features than ever before.

Remote communications

All Elite fire panels can be supplied fitted with a point reporting, dual line dialer if required.

With a dialer fitted, system information down to point level can be communicated to a receiving centre. The dialer uses standard reporting formats (SIA or contact ID) ensuring compatibility with a wide range of receivers and can report to multiple accounts if required.

The complete VES Elite system includes the UL and FM listed Elite two and four loop panels capable of supporting up to 504 loop devices each, UL and FM listed Elite RS one and two loop panels with or without built in dialer UL and FM listed sensors, loop powered modules, pull stations panels, annunciators and I/O boards.

IFP

For more information
contact: Kentec on +44
(0)1322 222121
Email sales@kentec.co.uk or
visit www.kentec.co.uk

Introducing EN12845 FIRE PUMP LINE

Patterson Pump Ireland Ltd. specialises in the production of world class fire protection equipment around Europe.

From enquiry stage, right through design, manufacturing, installation and after sales service, Patterson Pump Ireland strives to provide a quality, reliable fire protection system, at the most competitive price.

EN12845 provides a pan-European standard for the design, installation and maintenance of automatic sprinkler systems, and encompasses the basic requirements set forth by local rules into one European Standard.

The new Patterson Pump End Suction product line is the latest addition to the Patterson Sentinel™ range. Cost effective and efficient, these will be used in fire pump packages specifically designed and built to comply with the regulations of European standard EN12845, along with other local rules.



PATTERSON PUMP IRELAND LIMITED

A Subsidiary of Patterson Pump Company U.S.A.
Unit 14, Mullingar Business Park • Mullingar, Co. Westmeath, Ireland
Tel.: 353 44 934 7078 • FAX: 353 44 934 7896
E-mail: info@ie.pattersonpumps.com

www.ie.pattersonpumps.com

Pumping Technology for Tomorrow's World
Patterson



Installing fire safety glass - tips to save lives

Specifying fire safety glass is only the first step in delivering a fire safety solution. All too often the significance of correct installation and choosing the right glazing materials are overlooked. It's of the utmost importance that all components in a fire-resistance glazing system are fire rated, compatible and approved.

Here, Steve Goodburn, sales director of fire safety glass manufacturer CGI, shares his tips on how to ensure that fire safety glass in doors, windows and panels really does afford the very best protection.

So, to ensure that the fire safety glass offers the highest protection and is correctly installed there are three key pieces of advice:

- **Check the glazing material** – Standard glazing material products won't withstand the high temperatures experienced during a fire and will combust, melt or work loose within a very short period of time. Eventually the glass will twist or fall out, allowing the fire to spread.

Specialist glazing materials should be specified along with the glass itself, as a fire resistant system. Ceramic tape is an ideal and economical medium for glazing most types of fire resisting glasses including, both insulated and non-insulated panels.

CGI offers a range of glazing media within its Certifire CF257 certification, full details of which can be downloaded from www.cgii.co.uk

- **Choose a fire resistant frame** – While emphasis is always put on specifying the right glass, choosing the right frame is also very important.

The combination of a fire glass with a poorly designed frame, or a frame manufactured from a sub-standard material, will almost always render the system non fire-rated and at risk of immediate failure in a fire.

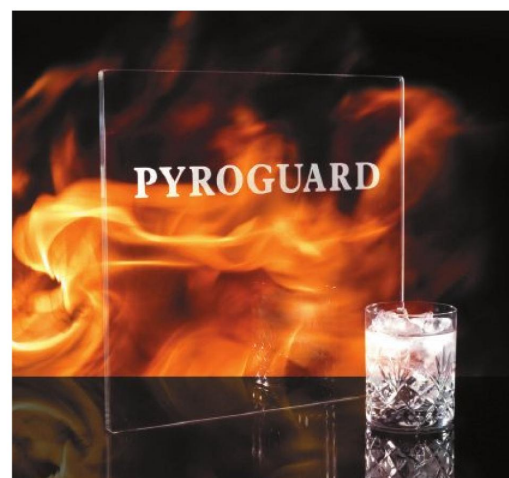
CGI has a wealth of evidence to cover hardwood timber frames as well as fire rated steel systems. There is a trend to move towards softwood frames because of cost and test evidence is available in this area too.

CGI is also working to develop fire tested wooden framing systems of slimmer thicknesses to suit the demands of the architectural world.

Hardwood and steel frames are the most suitable, simply because of the non-combustibility of steel framing systems, or slow char rates of hard wood – a selection of various frame cross sections are available in CGI's Certifire documentation.

- **Know the certified sizes** – As well as the use of inappropriate frames, glazing media and sealant systems, there's also confusion about the approved sizes of fire safety glass.

The orientation and area of the glass is all important. A piece of glass that's been cut to portrait sizing should be installed that way. Install



it horizontally and you may well be exceeding the test parameters of that product and thereby reducing its effectiveness. It will also no longer be a certified installation. Always check the maximum area available with the test evidence.

Installers have an obligation to pay close attention to test evidence, as this will always specify the allowed widths and heights. Failure to comply will render the fire safety glass out of certification.

Glass is undoubtedly a key component in achieving a fire safety glazed system however the importance of the frame, glazing material and orientation of the glass shouldn't be dismissed. If they are, the integrity of the glazed system is immediately compromised and both buildings and lives put at risk.

CGI provides data sheets and product updates to its distribution network and runs CPD sessions for architects and specifiers to promote correct installation techniques.

CGI recently invested in a new R&D laboratory at its Merseyside headquarters and appointed a specialist polymer chemist to lead its product development. The company now employs 55 people and is focusing on testing its full range of glasses to increase the tested size, impact performance, application and overall performance of its products.

IFP

For more information please contact:
CGI
on 01942 710720 or visit
www.cgii.co.uk



"Confused about fire glass specification? Talk to CGI"

☐ PYROGUARD - E + EW

Stockable, cuttable range of fire resisting glasses developed for integrity and radiant heat control. Available in 7mm (30min), 11mm (60min).

☐ PYROGUARD INSULATION (FIRESWISS FOAM) - EI

Stockable, cuttable range of fire resisting glasses for integrity and insulation. Available in 15mm (30/60min), 19mm (30/60min), 23mm (60min), 27mm (60min).

The Pyroguard fire resisting glass range is manufactured exclusively by CGI at its purpose-built factory in Haydock, UK. The unique laminating process allows the production of a variety of glass types, with differing fire performance and visual appearances.

For performance and stock sheet availability please visit www.cgii.co.uk



CGI
INTERNATIONAL LTD



CGI International, International House,
Millfield Lane, Haydock, Merseyside WA11 9GA
T: +44(0)1942 710 720 F: +44(0)1942 710 730
info@cgii.co.uk www.cgii.co.uk

PYROPLEX®

UK Manufacturer of Passive Fire Protection Products

PYROPLEX®

UK Manufacturer of Passive Fire Protection Products

FIRE GLAZING SELECTOR							
Fire Door Glazing				Fire Screen Glazing			
Typical Configuration							
Fire Resistance	30 Minute	30 Minute	30 Minute	30 Minute	30 Minute	30 Minute	30 Minute
Product							
System/Product Code	FD30 Pyroplex	FD30 Pyroplex	FD30 Pyroplex	FD30 Pyroplex	FD30 Pyroplex	FD30 Pyroplex	FD30 Pyroplex
Testing Standard	BS476 Part 22, Clause 18	BS476 Part 22, Clause 18	BS476 Part 22, Clause 18	BS476 Part 22, Clause 18	BS476 Part 22, Clause 18	BS476 Part 22, Clause 18	BS476 Part 22, Clause 18
Third Party Accreditation							
Application							
Length	1800mm	1800mm	1800mm	1800mm	1800mm	1800mm	1800mm
Colour	Black, White, Brown, Green	Black, White, Brown, Green	Black, White, Brown, Green	Black, White, Brown, Green	Black, White, Brown, Green	Black, White, Brown, Green	Black, White, Brown, Green
Timber Species	Hardwood Softwood	Hardwood Softwood	Hardwood Softwood	Hardwood Softwood	Hardwood Softwood	Hardwood Softwood	Hardwood Softwood
Glazing Types	Single Glazing/Pane	Single Glazing/Pane	Single Glazing/Pane	Single Glazing/Pane	Single Glazing/Pane	Single Glazing/Pane	Single Glazing/Pane
Adhesive	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Glass	Pyroplex Safety Pyroplex Plus Pyroguard C/W CERTIFIRE Approved Glass	Pyroplex Plus Pyroguard C/W CERTIFIRE Approved Glass	Pyroplex Safety Pyroplex Plus Pyroguard C/W CERTIFIRE Approved Glass	Pyroplex Safety Pyroplex Plus Pyroguard C/W CERTIFIRE Approved Glass	Pyroplex Safety Pyroplex Plus Pyroguard C/W CERTIFIRE Approved Glass	Pyroplex Safety Pyroplex Plus Pyroguard C/W CERTIFIRE Approved Glass	Pyroplex Safety Pyroplex Plus Pyroguard C/W CERTIFIRE Approved Glass
Glass Area	0.45m² 0.50m² (Pyroguard C/W)	0.50m²	0.50m²	0.50m²	0.50m²	0.50m²	0.50m²
Glass Thickness	5-7mm	5-7mm	5-7mm	5-7mm	5-7mm	5-7mm	5-7mm

Pyroplex Limited, The Furlong, Droitwich, Worcestershire WR9 9BG, UK
Tel: +44 (0)1905 795432 Fax: +44(0) 1905 795438
Email: info@pyroplex.com Web: www.pyroplex.com



Pyroplex Glazing Selector

Architectural design is increasingly incorporating the use of fire resistant glazing.

The Pyroplex Glazing Selector outlines the correct seal that is compatible with a wide range of fire resistant glass, making fire resistant glazing system selection simple.

Certifire approval provides you with the confidence that our products have achieved certification at a higher level than the minimum requirements.

For our full range of Pyroplex passive fire protection products visit us at www.pyroplex.com

For a free copy of **The Pyroplex Glazing Selector** email us at info@pyroplex.com or telephone 01905 795432.

Pyroplex® Limited, The Furlong, Droitwich,
Worcestershire WR9 9BG, UK. Tel: +44 (0)1905 795432
email: info@pyroplex.com web: www.pyroplex.com





New approaches to fire safety design

By Mike Wood

Pilkington Group Ltd

A revolution has been taking place as fire safety engineering design strives to develop a distinctive identity in its own right. The risk-based design concepts and methods that have emerged tend to ask just as many questions as they answer.

Practice has yet to establish a level of consistency from one practitioner to another. In particular, risk judgements are subjective, influenced by circumstance and knowledge, and therefore need to be as fully informed as possible. It is now more essential than in the past to have a deeper and broader understanding of product behaviour in fire, especially as confidence in the assessed risks depend fundamentally on the products delivering the presumed performance.

The importance of performance

Under a risk-based regime, product reliability and dependability become relatively more important than in the past. It is unsatisfactory to rely on single prescriptive furnace tests, or only a handful of tests which are limited in range and scope. Selective reference to an individual research paper, unsupported by reference to others, is also equally as inadequate. That cannot give the breadth of understanding that is necessary. Risk-based, individualistic design should be guarded about undue generalisation.

If behaviour in real fire conditions is the key consideration, then other criteria than those recorded in prescriptive tests should be evaluated. The essential characteristics of the product's underlying technology are important, together with an evaluation of sensitivity to fire. It is the mechanism of change in fire that matters fundamentally. And an evaluation of mechanism should underpin predictions of likely behaviour. This means looking at the fullest possible test record, the product's history of performance and the level of control that the product provides in real fire situations. For example, under real fire situations different fire-resistant glass products cannot be taken to be the same.

Each fire-resistant glass has its own characteristic risk profile – a combination of the quality of the underlying technology, manufacturing control, manufacturer quality commitment, product make up and extent of testing – which can only be judged by evaluating failure mechanisms and product robustness from the depth and breadth of



the individual product test profile.

The anticipated fire scenario – the projected maximum temperature, the rate of temperature rise, the fire load and duration of the fire – are important since some technologies used for fire-resistant glass are not robust enough to perform reliably and consistently with the same degree of confidence in all fire conditions. Each fire-resistant glass is, in effect, different. Some of the technologies in particular, e.g. toughened glass, are inherently more unreliable and potentially more variable than others in fire, considerations that should influence the appropriate fire scenarios for their safe use.

Prescriptive regulation

Authorities throughout the developed world recognise the critical importance of regulation to secure basic fire safety standards in buildings. Fire presents major hazards for occupants and fire-fighters, significant threats to property, and clear risks to community wellbeing and wealth. Fire is notoriously destructive and unpredictable and not naturally subject to the rigours of scientific control. It possesses infinite capacity to surprise and can develop in ways not entirely anticipated when original design assumptions are made. The risk assessment may not, therefore, be straightforward.

The traditional route to fire safety regulation is by prescription, i.e. handed down rules and guidance that are substantially based on experience and history. Prescription has served fire safety well, and continues to do so. It offers the comfort of familiarity, consistency, and the application of

traditional custom and practice, building on what has gone before, in effect, by a process of gradual evolutionary step-by-step improvement. Prescription is relatively easy to apply and follow, and generally calls for little interpretation.

There is an element of faith in the prescriptive approach – that guidelines and recommendations have worked and that they will continue to do so, even if the built environment changes. It is evident that prescription applies more suitably to the common building situations and to more traditional building and architectural styles. Critics would say that prescription is too rigid, too unforgiving of flexible design and too hidebound by history. Supporters point to a successful record, reflected in falling fire deaths, consistency of application and the security of what has been seen to work in the past. It also has the advantage of being transparent.

Risk-based design

Advocates for prescription question the risk to fire safety standards if replaced by individual decision making in what

could become a design free-for-all. There is a concern that fire safety might become a lower priority objective to other more day-to-day functional and opportunistic objectives, especially when squeezed by a shrinking budget. Advocates for risk-based approaches point to the increasing need to be flexible in design, and that no two modern buildings are alike.

The style of modern buildings in most city centres – increasingly larger, taller, more costly, and more complex with multiple mixed occupancies and a range of functional requirements – calls for a different approach. Architectural fashion and styles of construction have changed dramatically over the last thirty years. The widespread use of glass, and the common employment of large glazed areas in single installations, is testament to that. Prescription based on past experience may not be the most appropriate approach to anticipate and accommodate architectural change, especially given the fast pace of innovation in construction.

There is merit in the risk-based approach. But there are justifiable questions of consistency of application and openness to public scrutiny, and the approach needs to be based on transparent standards of technical correctness (but without, as yet, an adequate quality control mechanism). In place of received wisdom comes an analytical process which should be founded on technically sound principles, using established facts and relationships between physical parameters. It should ideally be founded on scientific process and outlook. Practice, however, can drift apart from principle.

When fire breaks out, you need a glass that keeps its cool.



Pilkington Pyrostop™ and Pilkington Pyrodur™

In the event of fire, Pilkington **Pyrostop™** can provide insulation against heat for up to 120 minutes, with Pilkington **Pyrodur™** also able to provide full insulation for a short period of time – protecting the property and giving people more than enough time to vacate the building safely. As well as acting as a barrier against hot gases and flames to increase protection, they reduce any panic by turning opaque. Available in a range of thicknesses to suit every need, Pilkington **Pyrostop™** and Pilkington **Pyrodur™** can definitely stand the heat. For more information visit www.pilkington.co.uk/fireresistant email pilkington@respond.uk.com or call 01744 692000 quoting 20500.



PILKINGTON
NSG Group Flat Glass Business

FIRE RAY®

Optical Beam Smoke Detectors



FIRE RAY® 5000



FIRE RAY® 50R/100R



FIRE RAY® 2000



FIRE RAY® 2000 EExd

- Low cost protection of large areas
- Easy Installation and low maintenance
- Worldwide approvals
- Over 600,000 installations worldwide
- Variety of models for all applications

A range of accessories are available:-



Universal Bracket for the F5000



Reflective Beam Prism Plate (on a Universal Bracket)



Range of Prism Installation Accessories

FIRE RAY® - The leading light in smoke detectors

The Sage, Gateshead protected by FIRE RAY®



FIRE
FIGHTING
ENTERPRISES

9 Hunting Gate, Hitchin
Hertfordshire SG4 0TJ

T +44 (0) 1462 444740

F +44 (0) 1462 444789

E sales@ffeuk.com

W www.ffeuk.com



Fire resistance

The fundamental property of fire resistance is not always correctly interpreted. For example, fire resistance should not be seen solely in terms of endurance, i.e. time. Fire resistance for glass, in particular, needs to be evaluated in more specific terms. The concept of a fire resistance rating for the building as a whole (“one size fits all” philosophy) does not strictly apply, since materials used in the construction have fundamentally different sensitivities to heat and different deterioration mechanisms. Glass, for example, is sensitive to thermal shock or stress and is therefore more

according to three main criteria: load bearing capability (as relevant), integrity (ability to act as a physical barrier to hold back fire) and insulation (an integrity barrier and a shield against all forms of transmitted heat). There is a big performance difference in particular between insulation and integrity, differences which carry major implications for use in fire, especially if that fire develops strongly and lasts several hours. A presumption that is also too often taken is that a given time in a fire test correlates directly with the same time in a real fire situation. The performance in practice under real fire conditions may be longer or shorter,

Fire resistance in standard definitions is taken to be the ability of a component, or construction element of a building, to satisfy defined criteria evaluated under formalised test conditions, expressed for a specific test time (e.g. typically 30, 60, 90, 120, 180 minutes).

vulnerable to the initial, rapid temperature rise characteristic of natural fires (which is not reflected in the standard furnace test). Fire-resistant glass technologies that can cope with thermal shock – such as special fire-resistant laminates – are therefore likely to be more robust in fire.

Fire resistance in standard definitions is taken to be the ability of a component, or construction element of a building, to satisfy defined criteria evaluated under formalised test conditions, expressed for a specific test time (e.g. typically 30, 60, 90, 120, 180 minutes). The function of the standard test is broadly to categorise products for product classification. Performance is classified

depending on the circumstances of the fire and the fire exposure. The characteristics of the individual product are also very significant.

What a test report does not say

A test report is a factual account of what happened on a particular day, in a particular test. It provides a description of the system and its components as tested. The test report, however, says nothing about the run up to the test, in particular whether the product is representative of normal run-of-the-mill production, or not. A single test report gives no guarantee that the next test, if repeated, would deliver the same result. And there

VETROTECH
FIRE RESISTANCE

Saint-Gobain
Glass Solutions

We Know Fire!

Your Solution for Fire Resisting Glass

A complete range for
all Fire Resisting
Glass classifications!



E = Integrity

Provides a physical barrier against
flame, hot toxic gases and smoke

SGG PYROSWISS[®],

SGG PYROSWISS[®] Extra



EW = Radiation

Control of the transmission
of radiated heat below
a specified level

SGG VETROFLAM[®],

SGG CONTRAFLAM[®] Lite



EI = Insulation

Highest performance limitation
of surface temperature on the
unexposed side

SGG CONTRAFLAM[®], SGG SWISSFLAM[®]

www.vetrotech.com

Photograph courtesy of Archal Architects Ltd


SAINT-GOBAIN
GLASS



is no requirement to place failed tests in the public arena. Consistency and robustness of behaviour can only be gauged by the number, scope and range of the full test evidence.

A single test is effectively only an indication of tendency and only allows broad categorisation into type. A test does not provide a basis for exercising choice between different fire-resistant glass types, a product, for example, achieving 31 minutes in the test being deemed to be the same as one achieving 42 minutes (when the difference is at least 30%). Under the conditions of a single test all products are deemed in effect to be the same – but in practice there are differences which could be significant in a fire if the full risks are to be taken into account. The standard test effectively provides an artificial black-white distinction between those products that have been deemed to have attained a minimum standard of resistance and those that have not, when in reality the risk evaluations for real fires are rather shades of grey.

The importance of mechanism

The mode of failure in fire should be a major part of the risk evaluation. For example, different risks apply for mechanisms of deterioration that are sudden and catastrophic, and therefore inherently unpredictable (e.g. as characteristic of toughened glass), compared with those that are gradual and progressive (e.g. as demonstrated by Pilkington Pyrostop and Pilkington Pyrodur, based on an inorganic intumescent laminated interlayer). Such stable mechanisms are essentially predictable and controllable, with a lower risk profile.

Glass, of course, is transparent. That means a possibility of high levels of transmitted heat which can lead to high levels of smoke generation on the protected, non-fire side by smouldering of common fixtures, fittings and furnishings, such as floor coverings. There is also the risk of fire transfer by secondary ignition. Considering such real fire factors, for example, leads to a questioning of how a basic integrity glass can be effective at 90 minutes or longer. If the fire has developed for that long, possibly with complete conflagration of one or more compartments, then radiant heat levels on the nominal protected side of the glazing will be so high that people and firefighters are likely to be at high risk, and the fire will have a high chance of spreading by secondary transfer mechanisms.

In real fire situations, a wider risk evaluation needs to take place. High levels of smoke and toxic fumes can develop from certain types of fire-resistant glass laminates based on substantially organic interlayers. An integrity only

glass might also develop high surface temperatures on the non-fire side which are capable of developing intolerable conditions for escapees, allowing high air temperatures to develop by convection in the protected space. A glass classified to the new (but seldom used) CEN class EW can suffer from the same difficulties. Both heat and smoke in the escape way can be a risk with some types of basic integrity glass. But, a glass with a full insulation function will prevent such developments and reduce risks accordingly to correspondingly low levels.

Such mechanisms are not recorded in standard tests – but they are vital in considering risks in real fire situations and therefore important in making specification and product selection decisions. Those decisions are also influenced by the fire safety objectives, the hazards of the building and its occupancy, the assumed design fire scenario and the anticipated potential fire development if chance should take over.

Conclusion

The risk-based approach to fire safety design needs a new and more appropriate approach in the way products are evaluated for their fire performance. It also becomes more important for authorities, regulators, designers, specifiers, and even building owners, to take a more critical view of design, product and building performance. The key should be fitness for purpose. This needs a more focused consideration of product behaviour than has been the case under prescriptive approaches, an approach which is far less reliant on consideration of only a few prescriptive tests.

High Standards Needed for Fire Protection Systems in Today's Buildings



By **Graham Ellicott**



It was Kenneth Olsen, the founder of Digital Equipment Corporation, who said in 1977 "The nicest thing about standards is that there are so many of them to choose from". Well the FIA disagrees with this statement! There may be a lot of different standards but for fire protection systems there is only one choice and that's the highest possible standard.

With this in mind, the Fire Industry Association has long chosen to set its sights on increasing the standard of fire protection installations in the UK, so that they are raised to the highest possible level and become the automatic choice for clients and specifiers.

So what does it take to be a fire protection company? Well, perhaps surprisingly, anybody can set themselves up as a supplier and installer of fire protection systems. Get yourself a white van, access to the job, a credit card to purchase products and you're in business!

The one other thing that you will need, of course, is a computer so that you can print your own certificates that infer that your work is of the highest standard and these typically might read 'We at Friendly Fire take a pride in our work at your building, so much so that we stand behind it and the proof of its quality is evidenced by this piece of paper'. Some of these certificates may even have a legible signature on them!!

The word 'irony' is defined by the Little Oxford Dictionary as 'expression of one's meaning by language of opposite or different tendency' and the previous paragraph should be read with that in mind. That's not to say, however, that it doesn't happen!

So how do you assure that the fire protection systems in today's buildings are of the highest standard? Well in the UK there are Third Party Certification schemes for suppliers, installers and maintainers of fire protection systems.

The UK Government acknowledges these and says in Approved Document B (the Fire Safety guidance document) of the Building Regulations of such schemes:

'Building Control Bodies may accept the certification of products, components, materials or structures under such schemes as evidence of compliance with the relevant standard.'

'Similarly, Building Control Bodies may accept the certification of the installation or maintenance of products, components, materials or structures under such schemes as evidence of compliance with the relevant standard.'

Similarly within the Government guidance documents for existing buildings published in support of the Regulatory Reform (Fire Safety) Order they stipulate:

'Third-party certification schemes for fire protection products and related services are an effective means of providing the fullest possible assurances, offering a level of quality, reliability and safety that non-certificated products may lack. This does not mean goods and services that are not third-party approved are less reliable, but there is no obvious way in which this can be demonstrated.'

'Third-party quality assurance can offer great comfort to employers, both as a means of satisfying you that goods and services you have purchased are

fit for purpose, and as a means of demonstrating that you have complied with the law.'

Under these schemes the competence of the companies and its operatives to supply, install, and maintain a particular type of fire protection system is assessed.

For new construction work at the end of the installation, the fire protection contractor supplies a 'Certificate of Conformity' to his client along with the specification and details of the work done. The FIA believes that any Certificate of Conformity that is not backed by a third party certification scheme where appropriate should be treated with some distrust. Since April 2007 this supply of information has been formalised in Building Regulation 16B, the rationale of this being that the information can then be used by the Responsible Person as designated in the Regulatory Reform (Fire Safety) Order to operate and maintain the building in reasonable safety.

For routine maintenance work you as the Building's Manager should look carefully at the documentation that you are supplied by the fire protection company to see if it references a Third Party Certification Scheme, if it doesn't then you should ask why not as without this you only have the word of the company that did the work that it is of the appropriate standard, and they would say that wouldn't they?!

As a building gets older, occupiers will make changes and these may mean that the fire safety measures are weakened. A new tenant may, for example, increase the fire load in a certain part of the building or put in new offices that require extra smoke detectors. In theory all of these changes should be documented in the CDM (Construction, Design and Management) file. This provides a record of all matters to do with the health and safety of those concerned in the construction, management and use of a building.

In summary, the FIA believes that:

- The highest possible standard of fire protection is the only acceptable choice for all involved in the design, construction and maintenance of the UK's buildings
- To raise the standards in the UK, the industry should use only those companies that are third party certificated
- A complete CDM file will enable the building's fire protection to be properly maintained to meet the requirements of the Building Regulations

But back to Kenneth Olsen, who also said in 1977 "There is no reason for any individual to have a computer in his home"! Well he certainly got that one wrong. . . .

Similarly the FIA strongly suggests that for your buildings that you will also get it wrong if you accept anything less than the highest standard of fire protection, and that this should be evidenced via third party certification.

IFP

Autrosafe interactive fire detection system

AUTRONICA FIRE AND SECURITY AS launched AutoSafe, a high-end fire detection system, in 1997. Since then AutoSafe has demonstrated its unique stability and reliability in more than 15,000 installations onshore and at sea worldwide.

The new generation AutoSafe 4 is designed for the toughest environmental and functional requirements and stretches the limits for a fire detection system even further. From hotels to cruise ships and drilling platforms, AutoSafe 4 delivers the most rigorous fire safety money can buy.

AutoSafe 4 provides advanced functionality within fire detection for a wide range of applications. The system is designed to meet requirements in the high-end segment of the onshore, maritime and offshore market, and to comply to international standards such as SOLAS, EN 54 and IEC 61508 SIL2.

AutoNet – a new network solution, secures communication between panels. This ensures a redundant and high-speed network expanding the system's limits.

AutoSafe SelfVerify® technology was the very first technology enabling fire detection systems to test themselves

Manual testing with gas or smoke is not reliable. Test gas or smoke is rarely used in calibrated quantities, and even a faulty detector will eventually react if its chamber is filled with enough smoke. AutoSafe SelfVerify® solves all such maintenance problems; time consuming and costly physical testing is no longer necessary. With AutoSafe SelfVerify®, the system completely checks all detectors, interfaces, connections, and cables – every day. The system does not only tests whether a detector is capable of provoking an alarm – it even verifies the sensitivity of every detector with a calibrated signal. The system ensures that each detector will always respond to the correct alarm level at any time.

Autronica Fire and Security AS has once again taken fire safety to a higher level. . .

For more information, please contact:
Robert Grande
Director of Product Marketing
Autronica Fire and Security
Tel: +47 73582377
Mob: +47 930 17 166
Email: robert.grande@autronicafire.no



Modular Fire Panel 5000 Series from Bosch

The Modular Fire Panel 5000 Series panel now operates with a new serial interface for directly connecting the Bosch Plena Public Address and Voice Alarm system without any additional contact interfaces. This reduces installation and hardware costs, especially for projects with many evacuation zones. In addition, fire panel networks can easily be tied together with the EVAC system. This makes intelligent operation of the Voice Evacuation System via the Fire Panel possible.

With the modular approach adopted for the Fire Panel 5000 Series, Bosch offers its customers fire alarm systems that can be tailored precisely to their needs. The modules that make up the fire panel system are extremely rugged, with all components completely protected by encapsulated housings to avoid damage from touching or static discharge. Regardless of the size of a building or site, only a few standard modules are required from which the customer can easily construct a tailor-made system. With 'click-and-go' modules, the system can be extended from one loop to up to 32 loops with more than 4,000 elements. (in network up to 32,000 elements). Another major



advantage of the 5000 Series is the 'hot plug' feature that allows the modules to be plugged in or removed for expansions or modifications while the panel is in operation.

The panels can be arranged in networks and, thus, operate in concert in dispersed applications. In order to handle such complex systems, the networking capabilities have been enhanced. Integration to a building management system is quick and smart and allows customized configurations to be created to meet special needs. And thanks to an extended history log that can record up to 10,000 events, the operational events of such large systems can be fully documented.

In addition to the enhanced features, the new series meets all relevant European Standards including the latest requirements of EN54-2 A1 and EN54-4 A2.

Bosch Fire Panel 1200 Series

Based on the company's proven high-end panel concept, the Fire Panel 1200 Series offers innovative fire protection in the one and two-loop segments, combining flexibility and ease-of-use with the reliability of the market proven Modular Fire Panel Series.

The 1200 Series panel is operated via an easy-to-use touch screen featuring a large 5,7" LCD display and an intuitive user interface with a clear menu structure. In addition, the panel offers various diagnostic functions including the display of extensive diagnostic information.

Based on the LSN (Local SecurityNetwork) bus system, the Fire Panel 1200 Series offers a high level of system stability, and supports the full range of proven LSN peripheral components. Furthermore, it provides synergies with the existing Modular Fire Panel family concerning specification, configuration, maintenance and logistics.

The 1200 series also offers an extensive choice of modules giving a broad range of possibilities for any application. The encap-



sulated modules are extremely rugged and are hot swappable, which means that it is possible to replace modules in a running system. The standard deployment of the 1200 Series panel is one loop. It can be

easily extended to two loops with an additional module.

Moreover, up to three remote keypads can be connected to the 1200 Series panel. It is also possible to connect the panel to an FMS (Fire Monitoring System) and/or a BIS (Building Management System)

As with Bosch's other fire-panel series, the 1200 Series panel operates with the new serial interface for the Bosch Evacuation Voice Alarm System.

This allows intelligent and more detailed evacuation control via the serial interface and reduces the number of relay output modules needed in multi-zone installations.

The Fire Panel 1200 Series also fulfils all relevant standards, such as EN54-2 A1 and EN54-4 A2.

For more information, please contact:

Bosch Security Systems

Mrs. Erika Goerge

P.O. Box 12 70, D-85504 Ottobrunn

Germany

Tel: +49 89 6290-1647

Fax: +49 89 6290-281647

Email: erika.goerge@de.bosch.com

Website: www.boschsecurity.com

LPCB Approval for C-TEC's XFP Fire Panels

C-TEC's entire range of XFP networkable analogue addressable fire alarm panels have attained third-party LPCB approval.

Recognised by governments and regulatory authorities across the world, the approval demonstrates that all six of C-TEC's XFP panels have been extensively tested for functionality and performance, comply with EN54 Parts 2 and 4 and meet the overall standards of the Loss Prevention Certification Board, the leading international certification body in the fields of security and fire protection.

Says Charlotte Manley, C-TEC's European Sales Manager: C-TEC invests millions of pounds in quality control and approvals and this accreditation underlines our dedication to manufacturing products of the very highest standards. The LPCB stamp is the ultimate seal of approval and I have no doubt that our investment will

pay off. We have already received advance orders and our overseas customers are particularly delighted by the news.

Offering high performance at a very competitive price, the XFP range is ideal for office blocks, shopping complexes and big industrial sites as well as smaller, stand-alone applications.

Available as a cost-effective single loop 16 zone panel in a plastic enclosure or a robust 1 or 2 loop 32 zone metal panel, XFP panels offer an array of user and installer-friendly features including full compatibility with Hochikis ESP and Apollos XP95, Discovery and Xplorer protocols, two independently programmable conventional sounder circuits and the ability to interconnect up to eight XFP main panels

onto a two wire RS485 network. The XFP is also fully compatible with C-TEC's new Hush Button fire alarm solution for Houses of Multiple Occupation.

For more information, please

contact the company's sales desk on +44 (0) 1942 322744.

Alexandra Makinson

MARKETING EXECUTIVE

C-TEC Stephens Way Wigan WN3 6PH

United Kingdom

Tel: +44 (0) 1942 403810

Fax: +44 (0) 1942 829867

Website: www.c-tec.co.uk



C-TEC Conventional Fire Panels

C-TEC manufactures three distinct ranges of conventional fire alarm panel:

The CFP 2-8 Zone EN54-2/4 fire panel

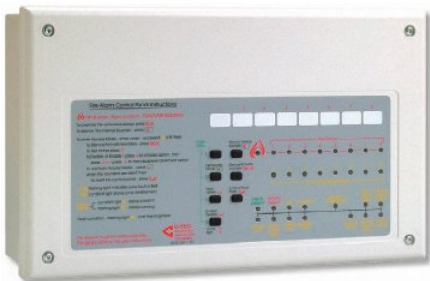
The MFP 4-28 Zone BS5839-4 fire panel

The FP 1-14 Zone BS5839-4 fire panel

All three ranges are renowned throughout the industry for their installability, reliability and price.

CFP conventional fire panel

Our award-winning CFP EN54 fire panel comes in three versions – standard, economy and LPCB approved. Supplied in an attractive flush or surface mountable plastic enclosure, all three come with 2, 4

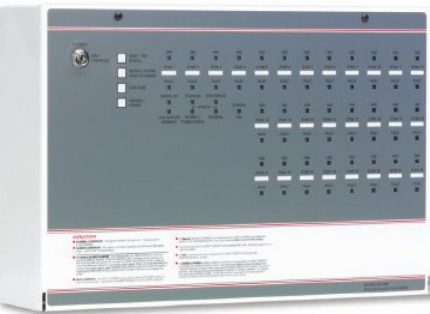


or 8 detection circuits and feature 4 conventional sounder circuits, 2 inputs (class change and alert) and 4 outputs (fire 1, fire 2, fault and reset). A wide range of engineering functions are also available including – dependent on the model purchased – selectable zone delays, co-incidence, non-latching zones and comprehensive fault diagnostics facilities. Attractively designed and extremely cost-effective, the CFP is fully compliant with EN54 parts 2 & 4, the European standard for fire alarm control and indicating equipment.

Push button and keyswitch versions of the CFP are available.

MFP conventional fire panel

Our MFP 4 to 28 Zone BS fire panel was designed to fill the gap between low cost, low specification fire panels and higher priced, higher specification equipment. Expandable from 4 to 28 zones in 4 zone



steps, the MFP's balance of features (4 sounder circuits, head-out fault indication and two on-board fire relays) plus its compatibility with a wide range of expansion boards makes it one of the most sophisticated BS5839-4 compliant fire panels available.

Extremely popular in the Middle East and other non-European countries, the MFP boasts a wide range of engineer functions including one man detector test, sounder walk test, sounder isolate, sounder delay, auxiliary isolate and an optional short-circuit = fire facility (pre-1980 BS, no resistors in call points).

FP conventional fire panel

Our FP 1-14 Zone BS fire panel has been protecting people and property for almost two decades. Like the MFP, it is supplied in a robust metal enclosure with a lift-off lid and heavy-duty base connections to help promote an easy first fix and straightforward maintenance. The FP's broad compatibility with virtually all known conventional smoke and heat detector ranges – a feature common to all of C-TEC's conventional fire panels – and its ability to interpret a short circuit in any zone(s) as a fire or fault make it particularly useful for retro-installations. Optional head out monitoring units are also available for systems



requiring compliance with BS5839-1 (1988).

For more information, please contact:

Alexandra Makinson
MARKETING EXECUTIVE
C-TEC
Stephens Way
Wigan WN3 6PH
United Kingdom
Tel: +44 (0) 1942 403810
Fax: +44 (0) 1942 829867
Website: www.c-tec.co.uk

Click on the link <http://www.c-tec.co.uk/> to subscribe to C-TEC's fabulous e-bulletin! News, views, hints, tips, technical updates and product releases – everything you need to know about C-TEC and its products, direct to your desktop

C-TEC's Innovative LPCB-approved EP203 Auto-extinguisher Panel

C-TEC's third-party LPCB approved EP203 three-zone automatic extinguisher panel has been specifically designed for areas housing expensive, dangerous or irreplaceable items such as computer servers, chemicals or antiques.

With the growing emphasis on safeguarding not only people but property and society's increasing reliance on computerised systems, the market for such panels is booming. Fully compliant with EN12094 part 1, the European standard for Fixed Firefighting Systems, the EP203 has been manufactured to the highest standards and epitomises quality, durability and reliability.

With three programmable detection circuits and three programmable sounder cir-



cuits (line monitored for open and short circuit faults), the panel has been extensively tested in a quality-controlled environment and is currently operating in a number of trial sites. A 128 x 64 graphic LCD unit with two-colour backlight provides a user interface for presentation of

APPROVED



FIRE ALARM CONTROL PANELS
CERTIFIED TO EN54-2/4
LVD, EMC, CPD COMPLIANT



AUTOMATIC EXTINGUISHER PANELS
CERTIFIED TO EN12094-1 & EN54-2/4
LVD, EMC, CPD COMPLIANT



12V & 24V POWER SUPPLIES
CERTIFIED TO EN54-4
LVD, EMC, CPD COMPLIANT

C-TEC is the only UK fire panel manufacturer with third-party product certifications and factory process approvals from the LPCB, BSI and VdS.

Currently trading in over 60 countries worldwide, our commitment to quality is underlined by our ISO 9001 accreditation (held since 1994) and our corporate membership of the Fire Industry Association (FIA).

When it comes to high-quality standards-compliant life safety equipment, you're safe with C-TEC

To find out more call our Sales Desk on +44 (0) 1942 322744
or visit us at this year's International Firex Exhibition



+44 (0)1942 322744



www.c-tec.co.uk

You're safe with



Your direct line to effective fire protection.

The SecuriSens® MHD 535 Multipoint Heat Detector

Securiton AG, Alarm and Security Systems
www.securiton.com, info@securiton.com

A company of the Swiss Securitas Group



For your safety

information and interrogation of data held by the EP203. The panel also possesses adjustable extinguishant release output, delay and flood time.

Up to eight Remote Status Units utilizing RS485 status connections can be used. With graphical LCD display and manual release function, the units indicate the status of the system in buildings with multiple entrances to the area the panel is protecting. Economy Status Units are also available but without the LCD display and manual release function. An optional relay

expansion unit, fitted in the main panel housing, can also be purchased for system expansion.

Comments C-TEC's MD, Andrew Foster, 'This product has been designed to meet demand from our customers for a top quality third-party LPCB-approved automatic extinguisher panel and we confidently expect the EP203 to exceed all expectations'.

Ideal for use in remote telecommunication outstations, unmanned chemical plants, computer rooms and any other area con-

taining invaluable equipment, the panel has an impressive range of features including programmable relay outputs with volt free changeover contacts, a time stamped log and a facility to delay the alarm sounders. An alarm counter records the number of times the panel has been in an alarm state.

For more information, please contact:

C-TEC

Tel: +44 (0) 1942 403810

Fax: +44 (0) 1942 829867

Website: www.c-tec.co.uk

Speed, Intelligence and Flexibility....Fike® CyberCat® Fire Alarm Panels



FIKE has long been known for being a leader in service, support and delivery in the fire protection industry. Fike's state-of-the-art CyberCat fire alarm and communications system is revolutionary in its speed, intelligence and flexibility. With split-second speed and intelligence the CyberCat fire alarm control panel cuts alarm response time between manual pull station and strobe activation to as little as one-quarter second! In addition, each CyberCat intelligent fire alarm system comes standard with the latest peer-to-peer technology. That means every fire alarm sensor and module can act as a peer, giving them the ability to communicate directly with the fire alarm panel...and with each other! Every fire alarm device can also generate highly detailed, accurate information, such as the exact location of the fire; and modules can be programmed to perform process management tasks such as shutdowns, HVAC, voice evacuation systems, elevators and Security/CCTV/ Building management awareness.

For more information please contact
Fike Alarm Systems
704 SW 10th Street
Blue Springs, MO 64015, USA
Website: www.fike.com

Syncro AS is the powerful and versatile single or two loop analogue addressable fire control panel from Kentec

With the proven multi loop Syncro software at its heart, the SYNCRO AS provides a fire control panel of outstanding and unchallenged robustness, versatility and flexibility.

Syncro multi-loop fire panel users will immediately be familiar with the features and functionality of the Syncro AS panel. It has the same display, help screens, menus, configuration options and controls as the Syncro panel range with all of the power and flexibility that comes from compatibility with other components of the multi-loop Syncro system and peripherals.

Syncro AS fully supports all devices from the leading, open protocol detector manufacturers and can be supplied with Apollo (S90/XP95 /Discovery), Argus

Spectrum (Vega) or Hochiki (ESP) loop drivers, all capable of providing up to 400 milliamps of loop current for the most demanding applications.

Syncro AS is also available as a Lite version, offering a very cost effective solution for smaller standalone installations requiring only one detection loop.

Connectivity

Syncro AS connects seamlessly to up to 63 other Syncro AS, or Syncro multi-loop panels and repeaters via the fully fault tolerant and robust Syncro network.

A dedicated serial communications bus is also available for connection of a range of I/O modules including a 16 channel general purpose I/O board, a 6 way sounder board, an 8 way relay board and a 4 zone conventional detector interface.

The panels RS232 serial interface port can be used to connect to a printer, computer based graphics system, modem, pager or, via third party interfaces to BMS systems.

Powerful Software

The simple and intuitive Loop Explorer configuration utility has been updated to include support for the Syncro AS providing the powerful cause and effect functionality familiar to Syncro multi-loop panel users.

Ease of Installation

The elegant and simple construction of the panel enables the chassis to be completely dismantled by removing just two screws. The outer cover can

also be detached by removing two hinge pins making first fix installation very simple and enabling the sensitive electronic parts to be stored safely for re-fitting at the commissioning stage.

For more information please contact Kentec on 01322 222121
Email: robine@kentec.co.uk or visit www.kentec.co.uk



Kidde Fire Protection – FireBeta Extinguishing Control Panels

The FireBeta XT, XT+ and ECU are the latest range of extinguishing control systems from KIDDE.

The range covers single area and multi-area extinguishing systems with the following:

FireBeta XT Compliant to EN12094-1 provides three detection zones with single area extinguishing controls.

FireBeta XT+ Is a modular system consisting of a 2, 4 or 8 zone detection module approved to EN54 parts 2 and 4 and up to 4 extinguishing modules compliant to EN12094-1.

FireBeta XT+ ECU Is a single area extinguishing module compliant to EN12094-1 which can be connected to an already installed conventional or addressable fire alarm control panel providing the controls required for an extinguishing system.

To compliment the extinguishing control panels a range of status indicators are available. Up to seven status indicators can be connected to a single extinguishing area, through a serial bus connection.

The FireBeta XT Ancillary board fulfils the requirements to extend signals from the extinguishing system for additional plant control or interface to a BMS or house fire alarm system. 10 Volt free contacts are provided on the ancillary board



for signalling status conditions such as manual release operated, gas released etc. Up to seven ancillary boards can be connected to a single extinguishing area providing distributed control and signaling.

All extinguishing control systems are suitable for use with the full range of Kidde engineered fire suppression systems incorporating 3M™ Novec™ 1230 Fire Protection Fluid, FM-200®, Argonite® inert gas and Carbon Dioxide.

Further information can be obtained from our website: www.kfp.co.uk

Kidde Fire Protection – Vega

KIDDE FIRE PROTECTIONS range of addressable control panels represent the ultimate flexibility in detection and alarm technology.

Microprocessor based distributed intelligence enables systems to be tailored to the exact requirements of a wide range of system configurations. Offering flexibility in design and operation, Kidde panels are ideal for installation in many applications.

Vega is an open protocol control panel which is compatible with Apollo XP95/Discovery and Hochiki ESP devices. The Vega panel is expandable from 1 to 16 loops in single loop increments. An 8 line 40 Character LCD allows ease of on site programmability, with clear information relating to fire and fault conditions.

Zonal LED indications for fire and fault support the information provided on the LCD, with the panel available in 24, 56, 88 or 120 zone versions.

A range of software features are provided to minimise the possibility of false alarms including day mode, programmable time delays, investigation timers allow the



user time to investigate the incident before a full alarm is raised.

Vega supports an extensive range of options including printer facility, repeater panels, plug-in option cards, networking capabilities including the VegaNET graphics display system.

The Vega range is provided in a number of standard panel configurations, although the modular configuration of the Vega enables unique panel specifications to be created on request.

Further information can be obtained from our website: www.kfp.co.uk



Morley-IAS by Honeywell products

ZX Series

The ZX Series of 1-5 loop networking analogue addressable control panels is the backbone of the MORLEY range. With up to 99 panels on a single network and a choice of networking configurations it is designed for more complex, multi-site networks.



The latest ZX1Se, ZX2Se and ZX5Se panels have greater loop and power capability and cost-effective design flexibility, enabling installers to meet all their obligations under the Disability Discrimination Act.

The ZXSe is an intelligent analogue addressable fire alarm control panel. It has been designed and constructed around proven and reliable microprocessor technology. This simple approach has produced a modular, scalable fire alarm platform suitable for protecting all types of premises. The ZXSe control panel supports a total of five industry leading protocols, allowing fire detection devices to be independently selected based on performance or aesthetic appeal.

The ZX series control panels seamlessly integrate with Apollo (Xplorer, XP95 & Discovery), Hochiki ESP, Nittan, Morley-IAS and System Sensor detection device protocols. Designed for maximum flexibility, the ZXSe control panel is supported by a complete suite of peripherals and software tools. Information on the location of fires, faults and system status can be easily displayed or printed in multiple locations. Integration with Voice Evacuation Systems, paging systems and third party control systems is supported through a range of peripheral interface units.

This adaptability, support and intelligence means that the ZXSe range of panels is suitable for new projects, system expansions, retrofits and system upgrades in all application areas. Offices, industrial units, multi-storey buildings, entertainment venues, industrial plants and hospitals are just some of the many applications that can benefit from the features of the ZXSe range of intelligent multi-protocol fire alarm control panels.

Dimension Series

The Dimension Series of intelligent multi-protocol fire alarm control panels from MORLEY-IAS FIRE SYSTEMS has been developed based on two concepts – simplicity and reliability. Just fix the control panel to the wall, connect the field wiring and everything else is pre-configured in the software.

Even programming the control panel is simple. No computer is required and it only takes a few key presses to have a working fire alarm system. First, set the protocol for the loop devices. Second, "Autolearn" the panel and finally, "Reset" the panel. The control panel is now protecting the building.

The Dimension series provides additional features allowing: programmable text messages to identify the exact location of each field device; a class change input for schools; coincidence and verification detection (false alarm management); sensitivity adjustment (between day and night); programmable function buttons; input/output logic; and extensive event-logging.

The result is a feature-rich fire alarm control panel constructed from high specification components to help both the installer and the end user. The Dimension series is a compact, high performance and economical fire alarm control panel for the protection of small to medium sized buildings. It is especially suited to small offices, retail units, health centres, leisure facilities, cinemas, nursing



homes, sheltered housing and other similar applications.

The Dimension Series offers optional 20 or 40 fire zones, supports Apollo (Xplorer, XP95 and Discovery), Hochiki ((ESP), Morley-IAS and System Sensor devices, and complies with EN54 part 2 and part 4. If specialised detection applications such as multi-sensor devices, CO detectors and high sensitivity laser detectors are required, additional feature sets can be added – without the need for costly upgrades.

Contact details:
Morley-IAS by Honeywell
Charles Avenue
Burgess Hill
West Sussex RH15 9UF
United Kingdom
Telephone: +44 (0) 1444 238 484
Fax: +44 (0) 1273 376984
Email: sales@morleyias.co.uk
Website: www.morleyias.co.uk

Notifier by Honeywell products

ID 3000 Series

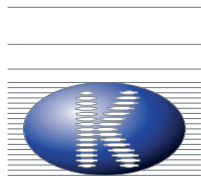
The Notifier ID3000 intelligent fire alarm panel offers a technically sophisticated range of facilities and functions, whilst remaining easy to install, program and operate. Modern styling and a variety of aesthetic options are sure to win over facility owners and architects.

The ID3000 is ideally-suited to large facilities such as shopping malls, schools, office buildings, hospital, hotels, factories and large warehouses. With its expansion capacity, the ID 3000 provides control of 2 to 8 loops, each with a capacity of 98 devices (99 sensors and 99 modules) and its modular design allows the user to tailor the panel to their exact application requirements.

It has been LCPB-approved to EN54 Part 2 and Part 4. Advanced design and manufacturing techniques coupled with Notifier's 50 plus years



of experience at the forefront of the fire industry, ensure that the ID3000 sets new standards in many areas such as product functionality, flexibility, user friendliness and reliability: in short, everything you would expect from the world leaders in modern life safety systems.



Kentec Electronics Ltd.

Leading in Fire Detection Control Systems

Conventional Fire Detection
Analogue Fire Detection
Extinguishant Systems
Custom Engineered



Sigma CP, Sigma CP-R, K3000



Sigma XT/XT+, Syncro XT+



Syncro Matrix, Sigma Matrix



Syncro, Syncro AS, Syncro I/O



Syncro ASM Marine

Visit www.kentec.co.uk to order your copy of our new 2010 product catalogue

POWER TO THE PEOPLE!



- ▶ A complete range of VdS or LPCB certificated EN54-4/A2 power supplies from C-TEC.
- ▶ All models offer low current consumption, a fault relay and link-selectable battery charging capacity.
- ▶ Ideal for powering beam detectors, auto-dial units, aspirating smoke detectors, fail-secure door systems, sounder control units and more.
- ▶ Chassis-only/custom PSUs also available - contact our sales desk for details.



01942 322744

sales@c-tec.co.uk

www.c-tec.co.uk

You're safe with

C-TEC

A full range of intelligent sensors, advanced detection products, input and output devices, repeaters, mimic drivers, printers and other peripherals complement the ID3000 to bring you the most complete and versatile fire alarm system in the market place. The ID3000 panels can be networked together either as a true peer to peer network or in a Master/Slave network, extending the total capacity of the system to fit the largest applications.

The ID3000 is designed in a modular fashion, facilitating installation and servicing whilst making the ID3000 very easy to tailor to the requirements of the application. The large LCD graphic provides easy to read and understand messages complying with the EN54 standard for primary user interfaces.

ID 60 Series



The Notifier ID60 Series Single loop intelligent fire alarm panel has been developed for both installers and end users with efficiency in mind, offering a technically advanced range of facilities and functions while remaining easy to install, program and operate.

The ID-60 Series is ideal for sites where very high detection sensitivity is part of the requirement, making the ID60 Series the choice for buildings containing computer rooms and control rooms, for example.

Three models are available in the ID60 series: the compact ID60, the ID61 with internal printer option and a larger separate power supply and the ID62 with internal printer option, a larger separate power supply and added space for 72 hours battery back up.

The ID60 Series supports Notifier's unique Very Intelligent Early Warning (VIEW™) technology. Combined with the patented AWACST™ (Advance Warning Addressable Combustion Sensing) and DIG (Dynamic Intelligent Grouping) algorithms, the ID60 series provides the most cost-effective, stable and reliable early warning systems without the need to use costly aspirating detection systems.

The ID60 Series are self-contained, on-site programmable, intelligent panels. They can be programmed either from the panel keypad or from a PC using the off-line Windows-based configuration tool. An "Auto-Learn" facility allows the user to install and commission a

standard system with a minimum of effort. The panel can also be upgraded on-site via a PC using the Notifier flash-programming tool, making it easy to upgrade existing sites with the latest features.

LPCB-approved to EN54 Part 2 and Part 4, the ID60 Series provides one loop capacity of 99 sensors and 99 modules, with 16 fire zones and 16 non-fire zones, and supports the full Notifier range of advanced detection devices.

Contact details:

Notifier by Honeywell
Charles Avenue
Burgess Hill
West Sussex RH15 9UF
United Kingdom
Tel: +44 (0) 1444 238 484
Fax: +44 (0) 1273 376984
Email: sales@notifierfiresystems.co.uk
Website: www.notifierfiresystems.co.uk

Twinflex and Duonet Systems from Rafiki Protection Ltd

Twinflex Two Wire System

Incorporating the Multipoint detector with built-in sounder means the whole system can be installed using only one pair of wires.

Using the Multipoint detector as part of the Twinflex 2-wire fire alarm system means that **when a detector is wired in, a sounder is too** – with no extra wiring required. This greatly reduces the number of points that need to be installed and the time it takes to install them.

As the Multipoint offers 7 different modes of detection, the installation is made even simpler as this one device suits all applications. Whatever type of detection is required, for any part of the installation it can be selected by the flick of a switch at the time of commissioning. Any one of the 3 different smoke modes, 2 fixed temperature heat modes, a rate of rise mode and a combination smoke or heat mode can be selected.

As the Multipoint detector is available with or without a full specification 92dBA sounder (for only a marginal cost difference) no extra devices need to be purchased when audible warning is required (meets audibility levels recommended in BS5839 Part 1: 2002). Twinflex callpoints can be run on the same pair of wires as detectors. Further cost savings can be utilised by using the new combined callpoint / sounder. Both detectors and callpoints have a selectable EOL module so any device can be set as the end of line monitor. The panel can also differentiate between callpoint or detector alarms.

If extra sound is required, or for areas that do not require detection, then the Hatari Sounder can be used on the same two wires, offering sound output of 100dBA. It also has a built-in EOL monitoring switch.

The panel can accommodate 32 devices per zone, has separate fault monitoring displays for each zone, and a one man



walk test facility. Zones are configured without the need to use resistors or capacitors on unused zones.

All Twinflex Systems have the 'Checkpoint' alarm confirmation feature drastically reducing false alarms.

Repeater panels are also available for the Twinflex system, which use key switch access and have the facilities silence, sound alarms and reset.

The Twinflex system is available from Rafiki Protection Ltd
Springvale Industrial Estate
Cwmbran UK
NP44 5BD
Tel: +44(0)1633 865558
Fax: +44(0)1633 866656
Email: Sales@rafiki.biz
Website: www.rafiki.biz

Duonet Analogue Addressable System

The Duonet system is a 1-2 loop intelligent analogue addressable, networkable, fire alarm system capable of supporting up-to 200 Multipoint combined detector/sounders per loop and a network of up-to 32 control panels.

The Duonet panel offers a full network capacity of up to 32 panels, each panel having 1 or 2 loops capable of supporting up-to 200 Multipoint combined

detector/sounders on each loop. The panel supports two plug in loop cards, giving choice for the size of system requirements. Although powerful software has been utilised, operation of the control panel remains user friendly with intuitive functions. Programming and commissioning of the Duonet system is carried out using the Duonet OSP software package, and as well as soft addressing the additional feature of 'safe initialisation' allows devices to be added or removed from the network easily.

As well as offering one of the most technically advanced systems on the market Duonet also offers the specifier a piece of equipment that is appealing to the eye. A renowned design company was commissioned to produce a control panel



that reflects the 'state of the art' technology it encases. The standard black hi-gloss finish panel for maximum visual impact. Many other finishes are available including brushed aluminium, walnut and marble if a different 'look' is required to make the Duonet panel a showcase product in its technical capabilities and also its appearance.

The Duonet system is available from
Rafiki Protection Ltd
Springvale Industrial Estate
Cwmbran NP44 5BD
UK
Tel: +44(0)1633 865558
Fax: +44(0)1633 866656
Email: Sales @rafiki.biz
Website: www.rafiki.biz

Siemens fire control panels

Sinteso fire control panels for flexible expansion

Reliable fire protection and smooth operation depend on interaction between all components as well as an understandable user interface. The Sinteso fire protection system from SIEMENS is designed for state-of-the-art solutions and covers every application need. All components are based on a uniform technology platform with standardized interfaces (BACnet) and, with their modular structure, offer a wide range of system combinations.



Sinteso FC20 control panels allow applications varying from small to large. The FC2030 and FC2060 panels, introduced in spring 2009, can be connected to existing detector lines, making it possible to gradually update a system. FC2030 is designed for two loops with up to 252 field devices, and FC2060 for four loops and up to 512 field devices (extendable to 1512). Existing detector groups and alarm concepts can be adopted by means of auto configuration and auto addressing. As a result, modernization concepts can be implemented flexibly and with low expenses.

The modular system architecture allows up to 32 control panels or floor repeater terminals to be networked together via the FCnet (fire control network) central bus. Even auxiliary facilities or remotely located plant buildings are thus easily safeguarded. The distance between two control panels can be up to 1,000 meters (expandable to over 15,000 meters). The panels are integrated via a BACnet interface into a danger management system. Ethernet interfaces allow additional connection to heterogeneous networks.

The user displays for all Sinteso control panels are characterized by a logical, ergonomic user interface. Standard keypads are available for functional steps that are performed frequently, such as "Confirm" or "Reset". Remote access and operation via a PC and a secured connection offer flexibility. As one of the leading providers of fire detection technology, Siemens will further advance innovative and efficient solutions to protect people, assets, and infrastructure.

Cerberus Pro fire control panels for comprehensive safety

The product portfolio Cerberus Pro from Siemens comprises different fire control panels, fire detectors, peripheral devices and accessories. It is suited for both standalone systems and extensive networks. The fire control panels combine high security standards with the latest technology. They are competitive for simple applications, but also powerful enough for larger applications: Up to 16 stations such as fire panels or fire terminals can be connected via C-Web in a redundant, EN 54-approved network with nodes for more than 512 devices. In addition, an Ethernet connection is available at each station which allows a maximum of 4 stations to be networked together. BACnet interfaces assure the connection to danger management stations.



The fire control panels process all messages generated by the system and trigger alarm signals. And because requirements vary from simple to network-wide solutions, the Cerberus Pro family offers three models (FC721, FC722 and FC724). All panels can be accessed either remotely or on site. The fire control panels and fire terminals are easy and intuitive to operate. They display the required information in a comprehensible way – centrally or locally on floor level. Visibility can be individually configured to display tailored messages in selected areas. In the event of an alarm, customized intervention texts facilitate correct actions.

With its auto-configuration possibility, Cerberus Pro protects people and assets right from the start, even during the construction phase. For this purpose, the control panels automatically configure and import data from all connected detectors and peripheral devices. They also automatically assign them to zones. In addition, all panels have an integrated degrade mode. This means that even in case of processor failure, the detector communicates an alarm to the panel, setting off all connected sounders including loop sounders.

Contact details:
Siemens Switzerland Ltd, I BT CC MC, Gubelstrasse 22
6301 Zug, Switzerland
Tel: +41 (41) 724 4512 Fax: +41 (41) 723 5490
Website: www.siemens.com/buildingtechnologies

Are you 'safe in



"Knowledge is a wonderful asset, but a little knowledge can be a dangerous thing".

These were the words issued from the mouth of my 'computer medic' after he recently sorted out my crashed computer, which I had naively tried to fix myself!

By Wilf Butcher

CEO, Association for Specialist Fire Protection (ASFP)

But technology does not need to be 'high-tech' for it to be underestimated. Even the seemingly simplest of technologies or processes (like changing a power plug) can have its consequences, if you wire it up incorrectly.

As a plumber once said to me whilst repairing my leaking radiator system, *"most of us would not think twice about repairing a faulty electrical socket, but when it comes to mending a leaking pipe we would rather call in the specialist plumber. But have you ever heard of anyone drowning whilst repairing a leaking pipe?"*

Fortunately, Government has now stepped in to ensure that much of the electrical work, once undertaken by the DIY 'specialist', must now be handled or approved by a professional with Part P qualification.

So what has this got to do with passive fire protection? The answer is, quite a lot.

Fire stopping is, perhaps, one of the least understood but most commonly installed elements of all passive fire protection systems. It affects just about every aspect of any building from the obvious, in the form of a fire door, to the protection afforded to the myriad of penetrations passing through a fire wall hidden out of sight (and mind) above a suspended ceiling.

To the untrained eye it's not rocket science and in a society conditioned to the expression 'it does what it says on the tin', it is not something that can be dealt with in an 'off the shelf' manner!

In reality, of course, a better turn of phrase might be 'It does what it states in the assessment'. For instance, a pipe collar may state that it has

Fire stopping is, perhaps, one of the least understood but most commonly installed elements of all passive fire protection systems. It affects just about every aspect of any building from the obvious, in the form of a fire door, to the protection afforded to the myriad of penetrations passing through a fire wall hidden out of sight (and mind) above a suspended ceiling.

the knowledge'?

been tested to achieve a rating of one hour, but unless you are aware of the make-up of the pipe with which it was fire tested and their combined performance during the test, how can you be sure that the collar you have installed is appropriate to the pipe you wish to protect? Similarly, is a one hour linear fire seal, tested between two concrete surfaces, suitable to be used in a gap between concrete and a dry lined partition? It may well not be appropriate!

In other words, reading the installation instructions is only part of the story. Unless you understand why you are installing the PFP system and what the implications might be should you do so incorrectly, there can be no certainty of the completed installation fulfilling its intended function.

range of fire industry disciplines. Within the fire protection industry (and I comment here specifically in relation to the passive 'built-in' fire protection sector), a third party certification scheme is one where the certification and registration of system, material, product or structure installers, provides a means of ensuring that installations have been conducted by knowledgeable contractors, to appropriate standards. Such a process is ongoing and subject to a third party auditing process by independent bodies accredited by the United Kingdom Accreditation Service (UKAS).

The ASFP, however, is growing increasingly concerned that Third Party Certification schemes are being confused with other schemes, sometimes known as Self-Certification. Self-Certification, by

In some industries the Government lends its backing to certain self certification schemes. At present, this does not, however, apply to the passive fire protection industry. It is of course possible for any organisation to set up a service offering a self certification training scheme, but without any means of formal accreditation, the essential checks and balances cannot be assured.

In April this year, the Practitioners Forum and the Business & Community Safety Forum submitted a joint ministerial submission to the then Parliamentary Under Secretary, Communities and Local Government, Sadiq Khan relating to 'The dangers of Fires in Timber-Framed Construction'.

The main thrust of this report considers the rapid spread of fire and the large amount of heat flux generated from fires within timber-framed buildings when under construction. However, the submission also makes reference concerning completed timber frame buildings and in particular the potential risk of fire spread which may increase dramatically should there be any aspects of poor workmanship in areas such as cavity barriers, fire stopping, or finish quality.

This is not of course an issue limited to the initial construction phase of a building and the above submission goes on to state that there is concern that, in the longer term, wear and tear, as well as professional and DIY alterations, will increase the risk of fire spread in completed buildings, even if workmanship on the original construction is good.

Research carried out by the **Association for Specialist Fire Protection (ASFP)**, in conjunction with the then DTI and ODPM, supports this view in that its findings indicate that the likelihood of deficiencies in installed fire stopping within buildings of more than two years in age, could be expected in the majority of buildings.

One of the key achievements of the fire industry over recent years has been the development of third party certification schemes, tailor-made to a

its very definition, affords no third party auditing process but may offer the provision of a certificate-of-conformity to suggest that the work has been carried out in an appropriate manner.

In some industries the Government lends its backing to certain self certification schemes. At present, this does not, however, apply to the passive fire protection industry. It is of course possible for any organisation to set up a service offering a self certification training scheme, but without any means of formal accreditation, the essential checks and balances cannot be assured. It follows, therefore, that any claims to offer assurances through such schemes should be scrutinised very carefully indeed!

It could be argued that not all passive fire protection is installed by a specialist company, as by circumstance it often forms just a small part of another trade's activities during the completion of a project. All the more reason, therefore, for such non specialist individuals and companies to be aware of the importance of what they are doing, the correct way to do it and their legal obligations in ensuring that the fire protection work they undertake complies with relevant and required standards, regulations, appropriate codes of practice and manufacturers procedures.

Recently published statistics indicate that 2008 witnessed the highest UK peace time fire losses of all time, rising over the previous year by 16%, to a record £1.3bn. We are constantly reminded these days of the importance of sustainable buildings, but there is nothing sustainable about a building destroyed by fire.



*keep a SharpEye
on your safety*



40/40 Series Flame Detectors

The new SharpEye 40/40 Series Flame Detectors are designed for long-term, reliable operation in severe, high-risk environments. All 40/40 Series detectors offer enhanced reliability and durability with a full 5-year warranty.

A heated window, fully SIL2 [TUV] certified and EN54-10, FM3260 and DNV performance approved, along with Ex hazardous area approvals [ATEX, IECEx, FM, CSA] ensure your peace of mind. Interfacing is also easy - we provide a choice of relay contacts, analogue mA, RS485 Modbus and HART. All of this combined in a compact, lightweight but rugged package makes the 40/40 Flame Detector the one to choose!

The 40/40 Series includes well-known and proven technologies such as triple IR (IR3) and UV/IR, and even a new Multi IR that allows simultaneous detection of hydrocarbon and hydrogen fires at long distances.

5 YEAR WARRANTY

Headquarters NJ (USA): +1 (973) 239-8398
Houston Office: +1 (281) 463-6772
Europe: +44 (141) 578-0693
E-mail: spectrex@spectrex-inc.com
Web: www.spectrex-inc.com



SPECTREX INC.



Industrial Flame Detectors for High-Risk Plant Protection

By Ian Buchanan

European Manager,
Spectrex Inc

Today's industrial installations are protected by a wide array of detection, monitoring, gauging and preventative devices and systems. Protection of high risk, valuable assets and personnel has never been more vital on installations such as those in oil & gas (onshore & offshore), petrochemicals, hazardous material handling and storage, etc.

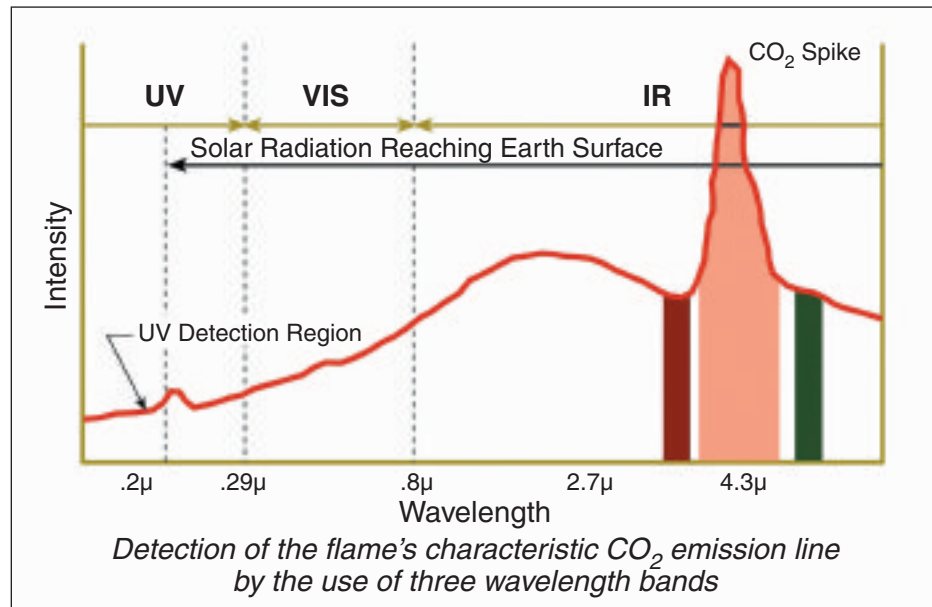
A key element in the armoury is the Fire Detection and Protection system, which normally comprises of a wide variety of fire detector types and controls which are designed to rapidly identify a fire hazard and prevent or extinguish the fire before it becomes a danger to plant and personnel.

Optical Flame Detectors are the favoured solution for high risk areas and outdoors as smoke and heat detectors are not effective outdoors. Unlike smoke and heat detectors, the fire/products of fire (smoke/heat) do not have to reach the optical detector to be recognised as it can 'see the fire (flame) radiation from distances up to 65 meters, within a 100° 'cone of vision' in all directions – and raise an alarm within 5 seconds!

Optical flame detectors provide the fastest detection of a fuel fire in the early ignition stage. This capability, adjustable field of view and programmability make them extremely well-suited for this critical duty. Flame detection, with high sensitivity and immunity to false alarms, is an essential determining factor when designing such systems.

Optical flame detectors operate by sensing one or more wavelengths of electromagnetic radiation emitted by the fuel flames. The precise wavelengths vary depending on the fuel being burned (the chemical reactions that generate energy in the form of electromagnetic radiation), the oxygen supply to the flames and environmental conditions that affect the radiation transmission in the atmosphere.

Many combustible materials include hydrocarbons,



which typically generate hot carbon dioxide. In the presence of an actual fire, the radiation intensity in the carbon dioxide peak band is usually high, while little or no radiation is received in the side bands. Thus, high radiation intensity in the peak band as compared to that in the non-peak, side bands is used to determine whether a real fire is present.

Flame detection has advanced a long way from the early days when a simple ultraviolet (UV) sensor was used. While the UV method was a very good and fast fire detector, it was also a very 'good' detector for all sorts of other radiation sources which were not fires, e.g. the sun, arc welding, etc. These false alarms led to a lowering in confidence in such detectors. They also had a limited detection distance – usually 15m at best.

Other types and combinations of sensor types were invented over the years, including single infrared (IR), double IR, combined UV/IR. All were found deficient in one way or another, mainly due to false alarms and/or low sensitivity (short range detection).

The most respected and widely used method today is Triple Infrared (IR3) technology using three different IR wavelengths. This type of spectral analysis ensures no false alarm to any continuous, modulated or pulsating radiation sources other than fire (including sources like black or gray body radiation). The high sensitivity of the Triple IR technology coupled with its inherent immunity to false alarms enables substantially longer detection ranges than previously obtained with standard detectors.

This detection approach offers

- Fast response (<5 secs)
- Long-range detection (up to 65m from fire)
- High sensitivity to small fires
- Highest immunity to false alarms
- High reliability and availability (IEC 61508-SIL2 TUV approved)

These performance benefits are combined in the Spectrex 40/40I IR3 Flame Detector with additional features to ensure unattended, reliable operation such as automatic integral self-test (every 15 mins); heated optics to ensure continued operation in weather extremes; a wide variety of interfaces (relays, milliamp, ModBus, HART); and a long warranty period (5 years) along with independent

3rd party performance approvals (EN54-10, FM 3260 etc.).

These types of detector are used to detect fire from hydrocarbon fuels, gases and materials, mainly focusing on the resultant carbon dioxide (CO₂) produced from such fires – along with a lot of other clever stuff! However, until now, 'invisible' hydrogen fires were detected by UV-type detectors as the products of the hydrogen fire were different (no CO₂ product from the fire) thus detection distances were very limited. Now, the Spectrex 40/40M Multi IR flame detector, incorporating four IR sensors, allows simultaneous detection of hydrogen flames at distances of 30m as well as detecting hydrocarbon fires up to 65m distant.

The increased activity in LNG and LPG processing and storage also requires the use of flame detectors and recent improvements in the effective detection range for such gas type flames (e.g. methane, propane, etc.) means that fewer detectors are required to properly protect any given area than was previously the case.

Triple/Multi IR detection technology overcomes the long-time problem of false alarms. One of the problems in detecting small fires in high-risk oil and gas industries, particularly at long ranges, was the potential for a high false alarm rate. False alarms could be generated by other electromagnetic radiation sources, which are either termed as "friendly fires" (like flares in the petrochemical industry) or by spurious radiation sources, such as direct and reflected sunlight, artificial light, welding, electrical heaters, ovens, and other sources of 'noise'. A false alarm could result in a costly discharge of the fire extinguishant; and if the fire extinguishant is of the type requiring replacement before reuse, the false alarm may disable the fire extinguishant system until it has been replaced or recharged and cause facility "shut-down".

The Spectrex 40/40 Series is also the most durable and weather resistant range of flame detectors currently on the market. Its features include a heated window, to eliminate condensation and icing; HART capabilities for digital communications; lower power requirements; and a compact, lightweight design.

These detectors are also fully tested to withstand harsh environmental conditions, including strong vibration, elevated temperatures (+85°C) as well as

deep freezing conditions (-55°C), high density fog, rain, snow and other extreme environmental conditions – making them ideal for installation in isolated (difficult to reach) industrial facilities located in Alaska, Siberia or on offshore oil rigs and FPSOs.

Approvals

Safety Integrity Level (SIL) – this approval means that the device has been independently tested by a recognised authority (e.g. TUV), who assessed the operation of the device and its hardware and software to determine and define the possible failure modes. Various parameters are determined including:

- Probability of Failure on Demand (PFD)
- Safety Failure Fraction (SFF)
- Hardware Fault Tolerance (HFT)
- Probability of Failure per Hour (PFH)

This is known as a failure modes, effects and diagnostics analysis (FMEDA). Full IEC 61508 certification includes much more – analysis of proof test effectiveness, the product design and manufacturing processes, software criticality, design and testing. Therefore, users have independent evidence on the reliability of the product and can use this data in determining the overall safety function for their process.

Performance to manufacturer's specification is also an essential requirement to prove, via 3rd party testing, that manufacturers' claims are justified. In the USA, Factory Mutual (FM) has a performance standard for flame detectors, (FM3260), where FM will witness real testing of the detectors in various fire scenarios, with various fuels and at different distances, and measure the area of detection and the response time to the fire. In Europe, the EN54-10 performance standard applies to flame detectors and is a mandatory approval, under the Construction Products Directive (CPD), for such products when used indoors.

Due to the increased reliability, durability, high quality and performance, SharpEye 40/40 Flame Detectors are approved to IEC 61508 – SIL2 (TUV); performance approved to EN54-10, FM3260 and DNV Marine as well as Ex hazardous area approved by ATEX, IECEx, FM, CSA and GOST with a resultant extension in the warranty period to 5 years. This represents a major investment for Spectrex in the development, design and manufacture processes along with the high costs of all these 3rd party approvals. Most 3rd party approvals also entail an initial and continuing annual factory assessment to ensure that standards, processes and performance are being maintained.

Better discussed in greater detail in another article, it is also important to briefly mention the proof testing of flame detectors. The detector's internal self-test will regularly check the sensors and electronics, etc. and provide a 'fault' output if any problems are found. However, necessarily, the regular self-test will not check the detector's alarm outputs as it is done every 15 minutes! Therefore, Spectrex manufactures a range of Flame Simulators which will simulate a 'real' fire and provide an *in-situ* means to fully 'end-to-end' loop test flame detectors, including the wiring connections, control system reaction, etc. The main advantages are that these simulators can be used in Ex Zone 1 hazardous areas and can test the detector from up to 9 meters away – thus avoiding the high cost of scaffolding and other access equipment and encouraging proof-testing when it may otherwise have been deemed too costly or difficult.



Summary

Primarily driven by the ever-growing requirements of today's industries that require high reliability and availability combined with cost effectiveness in their detection equipment for high-risk facilities and processes, Flame Detection technologies have developed significantly since the early UV detectors. Smaller in size, larger in brains, modern optical flame detectors provide industry with enhanced flame detection capability and reliability with much longer detection ranges and minimal (or no) false alarms.

IFP

Now FM Approved!

DURING A RAGING FIRE WHO TURNS OFF FIRE-SAFE VALVES? ESSEX WATCHDOG®



– the **only** actuator that operates valves automatically in an emergency – AND lets you operate the same valves manually in day-to-day service *without voiding or tampering with the fusible link!* One valve does two jobs – reducing installation costs and leak paths. Butterfly valves also available.



ESSEX FLUID CONTROLS (314) 832-4500
7700 GRAVOIS, ST. LOUIS, MO 63123
FAX (314) 832-1633



G-Press™ Piping System

Press fitting system for fire protection solutions



Save time, make money

- Lower system costs
- Reduced installation time
- Cleaner site assembly/fitting
- International fire standards approved



www.tyco-fsbp.com

Tyco Fire Suppression & Building Products
Unit 6, Westpoint Enterprise Park
Clarence Avenue, Trafford Park
Manchester, M17 1QS

Tel: +44 (0)161 875 0402
Fax: +44 (0)161 875 0493
info@tyco-fsbp.com

Please quote REF: 1024



Grinnell
FIRE PRODUCTS

tyco

Fire Suppression
& Building Products



Coming Clean on Fire Suppression



By Graham Collins

Institute of Fire Prevention Officers (IFPO) affiliate company member

The next move in the quest to save the planet is about to take place in Denmark, and it may well have “clean agent” implications for the fire protection industry. Graham Collins explains.

The United Nations Climate Change Conference takes place next month in Copenhagen. It will be the 15th “Conference of the Parties” to the United Nations Framework Convention on Climate Change and the 5th “Meeting of the Parties” to the Kyoto Protocol. The aim is to agree a framework for climate change mitigation beyond 2012. It follows the Climate Change: Global Risks, Challenges and Decisions scientific conference that took place in March.

Inevitably, this means that we can all look forward to a new round of debate on the clean agent fire suppression and emissions issues. But, how did we get to where we are today; what is a clean

agent; and what does the future look like?

Right up to the closing years of the 1960s, CO₂ (Carbon Dioxide) was pretty much the only available “clean” – more on that word later – dry, gaseous fire-extinguishing agent. Halon gases became commercially available in the late 1960s and were soon adopted as an alternative to CO₂, particularly for the protection of areas where people might be present. This was because CO₂ is most certainly not suitable for total flooding applications in normally occupied rooms or enclosures, as its discharge in fire extinguishing concentrations would be lethal to room occupants.

However, CO₂ continues to this day be a



popular, versatile and effective fire suppression agent for total flooding of unoccupied, enclosed, special-hazard areas such as power generation equipment, spray booths and turbines. When discharged, it leaves nothing behind to damage sensitive equipment, and with no agent clean-up required, business-critical installations can be up and running again in the shortest possible time.

It remains popular because it can be compressed into a liquid state which, when maintained under pressure, requires a smaller storage footprint than many other gaseous suppression agents. Additionally, as CO₂ has so many other commercial uses, refills are readily available throughout the world. An essential consideration though is to ensure that the flooded areas are adequately ventilated after discharge to prevent the accidental exposure of personnel to dangerous levels of CO₂ when investigating the cause of the discharge.

Despite the fact that, for the past 100 years, CO₂ has safely extinguished more fires in unoccupied enclosures than any other gaseous suppressant it does, mistakenly, come in for some bad press. This is due largely to the connotation it has with the term “carbon footprint”. However, the reality is that CO₂ occurs naturally in the atmosphere, and the gas used as a firefighting suppressant is extracted from a number of natural CO₂ producing processes. It is then stored until it is needed. Additionally, its use in fire protection is inconsequential compared with the emissions and environmental damage caused by an uncontrolled fire, or the huge quantities of CO₂ emitted into the atmosphere as a by-product of many industrial processes and transportation.

Of the Halons, Halon 1301 was by far the most popular as a gaseous fire suppression agent and widely accepted as the industry standard, particularly for the total flooding protection of areas containing high-value electronic equipment. It was a first-class fire suppressant, but the same could

not be claimed for its environmental credentials.

By the mid-1980s scientific evidence showed that these Halogenated Hydrocarbons were contributing to the depletion of the stratospheric ozone layer. Halon 1301 had ozone depletion potential, global warming potential and an atmospheric lifetime that was wholly unacceptable to the international community. So, despite its undeniable effectiveness as a suppression agent, its demise came with the signing of the Montreal Protocol in 1987. This generated a flurry of interest in developing alternative, sustainable, environmentally-acceptable and long-term agents. Some turned out to be more successful than others.

The Montreal Protocol was followed in 1997 by the Kyoto Protocol on climate change establishing the goal of reducing greenhouse gas emissions, citing a number of gases.

One firefighting agent that became particularly popular following the Montreal Protocol was the HYGOOD®-brand DuPont FM-200®, a Halocarbon or HFC suppressant. However, the Kyoto Protocol specifically sought to cap the emissions of greenhouse gases from HFCs, among others, which almost inevitably has led to confusion and questions continuing to be asked about its viability. The position should though move a major step towards clarification if the American Clean Energy and Security Act of 2009 – also known as the Waxman-Markey Bill – becomes law in the USA. It establishes a variant of a cap-and-trade plan for greenhouse gases to address climate change that was approved by the House of Representatives in June.

If this piece of legislation becomes law as it is currently written, it will have international implications and should eliminate any further speculations on the future of HFCs. This view appears to be supported by a recent announcement from a climate working group of the United Nations Environment Programme (UNEP) that has concluded that it will be impractical to pursue a

Recycle Your Halon.

The future of the planet is in your hands.

It's imperative to the health of our planet that we reduce the impact that halon has on our atmosphere. Halon Banking Systems is dedicated to the environmentally responsible recycling and redeployment of halon for essential end-users. Let us help you dispose safely of your halon, and together, we can make the world a better place.

Contact us today 001-416-458-1990.



HALON BANKING SYSTEMS

8601 73rd Avenue Suite #11, Brooklyn Park, MN 55428 USA
Tel: 001-416-458-1990 Fax: 001-763-315-0399
info@halonbankingsystems.us | www.halonbankingsystems.com

complete phase-out of HFCs at the present time. Firefighting is, in any case, a very minor user of HFCs, and the applications causing the most concern for groups such as the UNEP are insulation foams, air conditioning units and refrigeration.

Understandably, the Montreal and Kyoto protocols focused greater interest on inert gases that can justly claim to have no environmental downside. They have zero ozone depletion potential, zero atmospheric lifetime and zero global warming potential. Inert gases are non-toxic, they will not harm sensitive electronic equipment, art treasures or documents, and are safe to use in enclosed areas where people may be working.

These gases are a non-conductive and non-corrosive blend of naturally occurring gases – such as a combination of N (Nitrogen), Ar (Argon) and CO₂ – or, less frequently, a single naturally occurring gas. They work by lowering the oxygen content of the protected area to a point that will not support combustion but is sufficient to sustain human life, in much the same way as CO₂, but without the lethal implications. The best known of these is undoubtedly ANSUL® INERGEN® and the HYGOOD i3 Advantage® brand.

At the same time it was clear that there was a need for a chemical suppressant that met the industry's needs, while satisfying the environmental lobby. The most successful of these is a fluid-based system that uses sustainable, long-term

significant increase in the frequency or severity of any adverse effects.

This high performance fire-extinguishing agent has a negligible impact on the environment, with an insignificant global warming potential, lower than any of the halocarbon agents acceptable for use in occupied spaces. When discharged, SAPPHIRE leaves nothing behind to damage sensitive electronic equipment or documents. Compared with Halon 1301's Ozone depletion potential of 12.0, SAPPHIRE's is zero; its global warming potential is 1 against Halon's 6900; and the agent's atmospheric lifetime is between three and five days, contrasting with Halon's 65 years. It contains neither bromine nor chlorine and, significantly, Novec 1230 is not included in the basket of "greenhouse gases" identified by the Kyoto Protocol.

But, with so many options on the market, what is "clean"? The USA's NFPA (National Fire Prevention Association) 2001 (*Standard on Clean Agent Fire Extinguishing Systems*) covers both halogenated agents and inert gases. The 2008 update includes the latest toxicity limitations along with complete facts on the different types of halogenated and inert gaseous extinguishing agents on the market today. Another important feature of this edition is that it includes additional references to US EPA (Environmental Protection Agency) SNAP (Significant New Alternatives Program) approved agents.

While certain halocarbons and inert gases are used at design concentrations that are below the NOAEL or No Observed Adverse Effect Level, with safety margins from seven percent, no other fire suppression solution comes close to the SAPPHIRE system's safety margin.

technology that was developed by 3M. Called 3M™ Novec™ 1230 Fire Protection Fluid, it is the agent used in the HYGOOD SAPPHIRE® system.

It utilises new technology and has several major advantages over other Halon alternatives. Chemically, Novec 1230 is a fluorinated ketone or fluoroketone – a low toxicity, low vapour pressure fluid, with a boiling point of 49 degrees C, that exists as a liquid at room temperature, with a chemical structure of CF₃CF₂C(O)CF(CF₃)₂. This molecule was chosen because it provides an ideal combination of fire extinguishing performance, toxicological and environmental properties. The suppressant is stored as a low-vapour-pressure fluid that, when discharged, converts into a colourless and odourless gas. Typical total flooding applications use a concentration of the fluid that is well below the agent's saturation or condensation level, and the fluid has the lowest design concentration of any viable Halon 1301 chemical alternative.

While certain halocarbons and inert gases are used at design concentrations that are below the NOAEL or No Observed Adverse Effect Level, with safety margins from seven percent, no other fire suppression solution comes close to the SAPPHIRE system's safety margin. NOAEL is an important measure, as it represents the level of exposure at which there is no biologically or statistically

SNAP evaluates and regulates substitutes for the ozone-depleting chemicals that are being phased out under the stratospheric ozone protection provisions of the Clean Air Act. Under the Clean Air Act, the EPA is authorised to identify and publish lists of acceptable and unacceptable substitutes for Class I or Class II ozone-depleting substances. SAPPHIRE, for example, is listed as "acceptable without restrictions". Other sources of information are the Europe Commission's Joint Research Centre Institute for Health and Consumer Protection's ELINCS (European List of Notified Chemical Substances) scheme, and BS ISO 14520 (*Gaseous fire-extinguishing systems. Physical properties and system design*).

Few would doubt that the drive for ever improving environmental performance is inexorable, and the passage of the American Clean Energy and Security Act in the USA is predicted to increase the likelihood that a successor to the Kyoto Protocol will be adopted at the forthcoming Climate Change Conference in Copenhagen. The Guardian's US environment correspondent noted that the passing of the Act by the US House of Representatives: "delivers an important boost to the prospects of reaching an agreement for international action on climate change at Copenhagen this year." We must wait and see, but not for long.

IFP

Graham Collins is an Institute of Fire Prevention Officers (IFPO) affiliate company member. He can be reached on +44 (0) 1202 639277

Ship Halon Phase Out

GIELLETM
www.giellemarine.com

Retrofit with Gielle Clean agent fire
suppression systems

- Utilize existing piping
- 1 to 1 cylinder/nozzle replacement
- Existing Halon Systems / Existing HCFCs Systems
- Express service
- Worldwide 24h service
- Full range of International Approvals

Imo Halon Banking authorized
FP.1/Circ.37 - Jan 2009



Gielle / info@giellemarine.com



ATTENTION

**FM
APPROVED**



**all 10.5m & 9.1m High Buildings
The Best Sprinkler to Install**

THE N252 EC

**Extended Coverage with No In-Rack Sprinklers
Huge Savings on Materials & Labour**

Covering Solid-Pile, Palletized and Single, Double, Multiple Row Racks for Class I-IV and Cartoned Unexpanded and Cartoned Expanded Plastics

Building Height: 9.1 m Storage Height: 7.6 m Coverage: 18 m²

K-200 ESFR	K-240 ESFR	K-360 ESFR	K-240 CMDA	Ultra K17 K-240	N252 EC K-240
9.3 m ²	9.3 m ²	9.3 m ²	9.3 m ²	9.3 m ²	10 m²
3.4 bar	2.4 bar	15 psi-UL 20 psi-FM	1.6 bar (32.6 m/min)	1.5 bar	2.1 bar
12 sprs	12 sprs	12 sprs	186 m ²	15 sprs	7 sprs or 110 m²
4550 L/min	4550 L/min	4550 L/min 5120 L/min	6600 L/min	4550 L/min	Sys. demand 3660 L/min
950 L/min HS	950 L/min HS	950 L/min HS	1900 L/min HS	1900 L/min HS	950 L/min HS

Building Height: 10.7 m Storage Height: 9.1 m Coverage: 13.5 m²

K-200 ESFR	K-240 ESFR	K-360 ESFR	N252 EC K-240
9.3 m ²	9.3 m ²	9.3 m ²	13.5 m²
5.2 bar	3.6 bar	1.4 bar-UL 1.4 bar-FM	2.8 bar psi
12 sprs	12 sprs	12 sprs	9 sprs (min. of 110 m²)
5510 L/min	5500 L/min	5120 L/min 5120 L/min	Sys. demand 5440 L/min
950 L/min HS	950 L/min HS	950 L/min HS	950 L/min HS

**PATENT
PENDING**

- Wet Pipe or Pre-action Systems (when they meet the equivalency of a wet system).
- Approved for Non-combustible Obstructed Construction.
- Refer to Reliable Bulletins 008 & 908 for more information.
- Refer to FM Global's Data Sheets 2-8N, 2-2 & 8-9 for installation and design of Control Mode Special Application (CMSA) and extended coverage sprinklers.

9108 PIN 9959670372

Reliable®
TECHNOLOGY • QUALITY • SERVICE

For more information and to find your nearest location, see our website
www.reliablesprinkler.com

The Reliable Automatic Sprinkler Co., Inc.
Manufacturer & Distributor of Fire Protection Equipment



Sprinkler Protection of Storage Facilities

NEW Technology = More Options

By Thomas L. Multer

Vice President, Product Technology, The Reliable Automatic Sprinkler Co., Inc.

The industry and new storage sprinkler technology

In the past we have designed storage systems using two basic sprinkler categories: Control Mode Density area (CMDA) and ESFR. We now have a new category: Control Mode Specific Application (CMSA).

NFPA 13 for 2007 refers to these sprinklers as Specific Application Control Mode Sprinklers. For the 2010 edition of NFPA 13, the terminology will change to Control Mode Specific Application (CMSA) and new tables referencing CMSA design criteria will be added. The industry is already using the term: Control Mode Specific Application (CMSA).

Beginning in early 2010, FM Global will have a category called Storage Sprinklers. As the name implies; this will consolidate all storage sprinklers (CMDA, ESFR, and CMSA sprinklers) into a single document. Also, they will be changing to a set pressure and number of sprinklers to be calculated

based upon protection requirements and the storage sprinkler to be installed. Fire testing has provided them with extensive data on existing control mode sprinklers of K-11.2 (160) and larger. This eliminates the potential for incorrect interpolation of all the various design factors.

The control mode density area sprinkler (CMDA)

The various building heights, types of building construction, commodity types and heights, storage configurations, and less restrictive obstruction requirements allow these sprinklers to be used for virtually all storage applications.

The penalties for using CMDA sprinklers come with the addition of in-rack sprinklers when the height of the existing storage exceeds approved limits, higher hose stream demands, water supply duration of up to two hours, and increased system demand versus ESFR or new technology CMSA sprinklers.



The extended coverage, control mode density area sprinkler (CMDA)

NFPA 13 and Factory Mutual Global allow the installation of storage sprinklers that have been tested and approved for up to a maximum coverage area of 196 ft² (18.2 m²) or 14 ft x 14 ft (4.2m x 4.2m) maximum spacing. These sprinklers must provide the same level of protection of a standard coverage CMSA sprinkler, while they can reduce the total number of sprinklers installed in a system.

There are currently three extended coverage spray sprinklers, two pendants and an upright that may be used for control mode density area storage applications. The K factors are 16.8 (240), and 25.2 (360) for these extended coverage sprinklers. Their application and installation are limited only by NFPA 13 and FM Global requirements for control mode sprinklers.

Using extended coverage CMDA sprinklers may not reduce the total water demand, but they will reduce the amount of piping, fittings, and hangers required for installation versus standard coverage CMSA sprinklers.

The early suppression fast response sprinkler (ESFR)

Developed by the Factory Mutual Group to protect higher rack storage without in-rack sprinkler protection, the ESFR is the only suppression sprinkler. Because higher challenge fires could be suppressed without the use of in-rack sprinklers, building owners were able to be more flexible in their rack arrangements and eliminate the risk of mechanical damage inherent to in-rack sprinkler piping and sprinklers.

The ESFR has had an advantage in the past with a hose stream demand of 250 gpm (950 L/m) versus 500 gpm (1900 L/m) for most control applications. The duration of the water supply was also one hour while control sprinklers could require up to two hours.

Control mode specific application sprinklers (CMSA)

With a large variety of K factors to choose from, CMSA sprinklers have been developed to accom-

plish the main benefit of the ESFR: eliminate the use of in-rack sprinklers in high challenge storage applications. The difference is control versus suppression.

These spray sprinklers are listed at a minimum operating pressure and with a fixed number of calculated flowing sprinklers for a defined storage scheme and/or a type of commodity. Fire testing was conducted for the exact storage protection.

Current approvals for CMSA sprinklers include: Class I-IV, cartoned unexpanded plastics in solid piles, palletized, shelf or bin box, open frame racks, and solid shelves with certain limitations.

The manufacturer's engineering data sheets must be followed exactly for commodity approval, restrictions of maximum and minimum spacing, clearance to commodity, obstruction requirements, hose stream allowances, water supply duration, deflector distance to ceiling, sprinkler temperature requirements, and any other design and installation criteria.

For NFPA 13 – 2010, some of the CMSA sprinklers will be included in new tables for storage applications. To use any CMSA sprinkler that receives UL or FM Global approval under NFPA requirements, the following paragraphs in NFPA 13, 2007 apply: 3.6.2.1.2, Definition of a Specific Application Control Mode Sprinkler, 1.6.1 and 1.6.2: New Technology, and 8.4.9 Specific Application Control Mode Sprinklers.

Paragraph 8.4.9 is the most important. Specific application control mode sprinklers (now CMSA sprinklers) must be installed in strict accordance with their listing. You must use the manufacturer's engineering data; as it supersedes any NFPA requirement.

Standard coverage CMSA sprinklers

The manufacturer's engineering data must be used and not all CMSA sprinklers have the same height and commodity approvals.

As of this writing there are three standard coverage (100 ft²/9.3 m²) CMSA sprinklers approved for storage applications: Tyco's upright Ultra K17 (K-16.8/240), Viking's pendent VK592 (K-19.6/280), and Victaulic's pendent LP-46 (K-25.2/360).

Extended coverage, control mode specific application sprinkler (CMSA)

Reliable's N252 EC CMSA (K-25.2/360) pendent sprinkler is FM approved for coverage areas up to 196 ft² (18.2 m²) or 14 ft x 14 ft (4.2 m x 4.2 m) spacing for building heights up to 30 ft (9.1 m) in height with storage up to 25 ft (7.6 m). They are also approved for coverage areas up to 144 ft² (13.5 m²) or 12 ft x 12 ft (3.6 m x 3.6 m) spacing for building heights up to 35 ft (10.7 m) in height with storage up to 30 ft (9.1 m).

The total system water demand is also lower than the ESFR and standard coverage CMSA sprinklers for buildings of 30 ft (9.1 m) and 35 ft (10.7 m) in height with Class I-IV and cartoned unexpanded plastic storage.

Fewer sprinklers mean less pipe, fittings, hangers, fabrication expense, shipping expense, field labor and design time.

Again, the manufacturer's engineering data sheets must be followed exactly for commodity approval, restrictions of maximum and minimum spacing, clearance to commodity, obstruction requirements, hose stream allowances, water supply duration, deflector distance to ceiling, sprinkler temperature requirements, and any other design and installation criteria.

**Save: Pressure, Water Demand, or Number of Sprinklers Installed
Selecting Sprinklers by Pressures, Water Demand, and Area of Coverage
Class I-IV and Cartoned Unexpanded Plastics in Solid-Piled, Palletized, Shelf, or Bin-Box
and Single, Double, or Multiple-Row Open Shelf Rack Storage without In-Rack Sprinklers**

All flows referenced in the following charts are for comparison only. The actual flows will be higher based upon friction loss in the piping.

Building Height: 30 ft (9.1 m) Storage Height: 25 ft (7.6 m)

Sprinkler	N252 EC	K-200 ESFR	K-240 ESFR	K-360 ESFR	K-240 CMSA	K-280 CMSA	K-360 CMSA
Maximum Coverage	18.2 m ²	9.3 m ²	9.3 m ²	9.3 m ²	9.3 m ²	9.3 m ²	9.3 m ²
Pressure	2.1 bar	3.5 bar	2.4 bar	1.0 bar	1.5 bar	1.1 bar	1.0 bar
Sprinklers Calculated	6	12	12	12	15	12	12
System Demand	3143 L/m	4542 L/m	4542 L/m	4432 L/m	4542 L/m	3562 L/m	4432 L/m
Hose Allowance	950 L/m	950 L/m	950 L/m	950 L/m	1900 L/m	950 L/m	950 L/m
Duration	60 min.	60 min.	60 min.	60 min.	120 min.	60 min.	60 min.
Total Liters	245,580	329,520	329,520	322,920	605,040	270,720	322,920

Building Height: 35 ft (10.7 m) Storage Height: 30 ft (9.1 m)

Sprinkler	N252 EC	K-200 ESFR	K-240 ESFR	K-360 ESFR	K-280 CMSA	K-360 CMSA
Maximum Coverage	13.5 m ²	9.3 m ²	9.3 m ²	9.3 m ²	9.3 m ²	9.3 m ²
Pressure	2.8 bar	5.2 bar	3.6 bar	1.4 bar	1.7 bar	2.0 bar
Sprinklers Calculated	8	12	12	12	15	12
System Demand	4828 L/m	5507 L/m	5496 L/m	5117 L/m	5564 L/m	6268 L/m
Hose Allowance	950 L/m	950 L/m	950 L/m	950 L/m	1900 L/m	950 L/m
Duration	60 min.	60 min.	60 min.	60 min.	90 min.	60 min.
Total Liters	346,680	387,420	386,760	364,020	671,760	433,080

Building Height: 40 ft (12.2 m) Storage Height: 35 ft (10.7 m)

Sprinkler	K-200 ESFR	K-240 ESFR	K-360 ESFR	K-280 CMSA	K-360 CMSA
Maximum Coverage	9.3 m ²	9.3 m ²	9.3 m ²	9.3 m ²	9.3 m ²
Pressure	6.2 bar	3.6 bar	1.7 bar	2.1 bar	2.1 bar
Sprinklers Calculated	12	12	12	15	12
System Demand	6034 L/m	5496 L/m	5724 L/m	6098 L/m	6269 L/m
Hose Allowance	950 L/m	950 L/m	950 L/m	1900 L/m	950 L/m
Duration	60 min.	60 min.	60 min.	90 min.	60 min.
Total Liters	419,040	386,760	400,440	719,820	433,140

Building Height: 45 ft (13.7 m) Storage Height: 40 ft (12.2 m)

Sprinkler	K-320 ESFR UL	K-360 ESFR UL	K-320 ESFR FM	K-360 ESFR FM
Maximum Coverage	9.3 m ²	9.3 m ²	9.3 m ²	9.3 m ²
Pressure	2.8 bar	2.8 bar	3.4 bar	3.4 bar
Sprinklers Calculated	12	12	12	12
System Demand	6435 L/m	7250 L/m	7192 L/m	8100 L/m
Hose Allowance	950 L/m	950 L/m	950 L/m	950 L/m
Duration	60 min.	60 min.	60 min.	60 min.
Total Liters	443,100	492,000	488,520	543,000

Other Considerations for ESFR or CMSA Installation

Smoke and heat vents may be required by building officials when using control mode sprinklers for high piled storage protection. Fire testing for storage applications are not conducted using any type of ceiling openings.

Draft curtains may be required by building officials for use with ESFR systems to separate the storage protection areas from control mode sprinkler systems, systems that are used to protect manufacturing or other non-ESFR areas. CMSA sprinklers are by definition control mode sprinklers and draft curtains should not be required.

Storage Sprinklers will continue to Evolve

Sprinkler manufacturers will continue to develop new storage sprinklers; sprinklers that may protect storage applications with fewer sprinklers, less water demand, and lower pressures. Applications such as sloped ceiling approvals and improvements for dry and preaction systems will all be researched. However, nothing will eliminate the need to provide reliable sprinkler protection for storage applications; sprinklers that have been thoroughly tested and approved for the actual storage situation.

IFP

Thomas L. Multer

Vice President, Product Technology

A graduate of the University of Nebraska and a former Army officer, Tom has been in the fire sprinkler industry, both in contracting and manufacturing, for over 37 years. He is responsible for new product development and the technical services group at Reliable and is a member of the NFPA 13, 15, and 308 Technical Committees. He is a long time member of the Engineering and Standards Committee of the National Fire Sprinkler Association and holds numerous patents on fire protection products.

The Reliable Automatic Sprinkler Co., Inc.

Liberty, South Carolina
864-843-5225
Email:

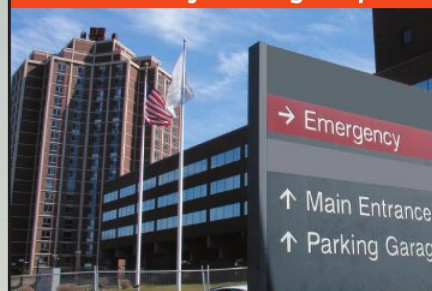
tmulter@reliablesprinkler.com



FlexHead commercial fire sprinkler connections: What's your application?

- More productive installers with lower installation costs.
- Perfect center-of-tile eliminating virtually all punch list items.
- Highest quality available featuring all stainless steel construction.
- Meets all code requirements including NFPA 13 and IBC.
- Fast-Track construction with simplified project management.
- Seismically qualified without the need for an over-sized ring.
- Meets USGBC objectives for green building design & construction.

Prescribed by leading hospitals



A smart choice for schools



Welcomed in the finest hotels



A bargain for retail buildings



FLEXHEAD[®]
INDUSTRIES

The pioneers in flexible fire protection

800-829-6975 www.flexhead.com



Pic courtesy of Jalite PLC. www.jalite.com



The common language for safety communication that can bring world harmony!

ISO 7010 is now finally published and is being implemented as best practice throughout the world to communicate the safety message using graphical symbols that transcends the barriers to good safety management created by different languages and are universally understood.

By Jim Creak

Editor of the Means of Escape Publication, active member of the BSI technical committee and Chairman of the Health and Safety Sign Association (HSSA)

The International Standard Technical Committee (TC145) is responsible for graphical symbols and has worked continuously for over 20 years to develop the very best safety signs to convey critical safety information.

The main categories of safety signs are in line with the needs of international requirement for occupational health and safety management and are incorporated in workplace safety legislation.

Identify, Locate, Inform, Instruct

Worldwide, safety managers are required by their domestic legislation to ensure that all personnel are aware of hazards, the nature of the hazard and the measures to be taken for the collective protection of occupants within the working and public environment under their control.

Safety procedures, practice and policies will require building managers, property owners and

estate managers to identify hazards and mark the location of emergency equipment and life safety appliances. Safety managers have an obligation to inform and educate all occupants about risk control, prohibit certain behaviour and give mandatory instruction to ensure collective protection.

ISO 7010 is soon to be adopted as a European norm and will be automatically adopted as the domestic standard within all member states of the European Union. All workplaces, including merchant and passenger vessels will be required to implement and display the new graphical symbols for safety communication. The objective is to ensure that only graphical symbols with the highest comprehension credentials are used and to ensure we are not playing 'Pictionary' with peoples lives.

A plethora of graphical symbols are currently being used without these credentials, have little

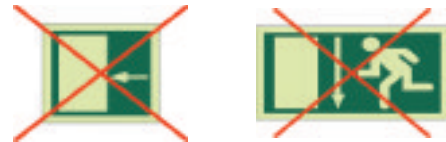
Pic courtesy of Jalite PLC. www.jalite.com



meaning and are untested in accordance with ISO 9186 to ensure comprehension. It is essential that if graphical symbols are to be effective, only standardised symbols should be used.

Whilst slight variation in public information symbols may cause, at worst, slight delay in finding a service, or cause embarrassment if you misinterpret the more abstract toilet sign, a mistake in the interpretation of escape route signs causing delay may ultimately lead to death.

Considerable confusion has been caused by the use of so called "Eurosymbols" for fire exit signs. Pure illustrations from way back in 1977 have been used, which have no comprehension credentials and fail the basic understanding that is a function of known and effective safety wayguidance convention.



Best practice International Standard ISO 7010 graphical symbols for escape route and ISO 16069 safety wayguidance convention ensure that an evacuee is progressed using a known convention through the escape route to place of relative safety.



Progress to the right

Progress down to the right

Progress down



Progress down to the left

Progress forward

Progress up to the left



Progress to the left



Progress down to the right

Means of Escape

The industry's leading online fire safety magazine

Products

Fire Resource Centre

Guides

Forums

Directory

Article Archive

Advertise

Free monthly newsletter

Free downloadable fire safety guides

Free advice, guidance & query forwarding

Forums, directory & more. . .

Subscribe www.means-of-escape.com

Email: ask@means-of-escape.com



The risk assessment regime required to manage occupational health and safety will determine requirements for safety communication across areas of reflective management.

The areas are outlined in International obligations for employers under occupation health and safety legislation. These obligations start with the *Identification* of hazard, the *Identification* of safety equipment, including escape and the *Identification* of fire fighting equipment including alarms.

Hazard Safety Equipment Fire Fighting



Explosive hazard



Breathing apparatus



Fire extinguisher

Employers are further required to *Locate* hazard and safety equipment, including escape route and appropriate fire fighting equipment. *Identification* and *Location* are the cornerstone of effective safety communication and are specific requirements of workplace legislation.

Following *Location* and *Identification*, a good communication strategy will include measures to reduce and *Control* risk.

The *Control* of risk will include the prohibition of behaviour or an activity that is likely to have an adverse effect on the risk matrix or may exacerbate the consequences of an incident.

Prohibition



Smoking prohibited



Mobile phones prohibited



Drinking/leaving prohibited

The *Control* of risk and the collective protection of building occupants will require employers, building managers and authority personnel to instigate and enforce mandatory measures to be taken.

Mandatory



Wear head protection



Wear eye protection



Wear foot protection

Finally and probably most important is that safety signs, their meaning and the action to be taken or not taken following them are part of a formal *Training, Instruction* and *Education* process for public buildings, schools, colleges, universities, and the workplace.

Identify, Locate, Inform, Instruct.



References

BS EN ISO 14001:2004 – Environmental management systems – Requirements with guidance for use.

BS ISO 16069:2004 – Graphical symbols and signs – Safety signs – Safety wayguidance systems (SWGS)

BS ISO 17398:2004 – Safety colours and safety signs – Classification, performance and durability of safety signs.

ISO 7010:2003 – Graphical symbols – Safety colours and safety signs – Safety signs used in workplace and public areas.

ISO 9186:2001 – Graphical symbols. Test methods for judged comprehensibility and for comprehension.

ISO 3864-1:2002 – Safety colours and safety signs – Part 1 safety signs in workplaces and public areas.

ISO 3864-4:2009 – Graphical symbols – Safety colours and safety signs – Part 4 colorimetric and photometric properties of safety sign materials.

EC Safety Signs Directive (92/58/EEC).

Jim Creak, Editor of the Means of Escape Publication, is an active member of the BSI technical committee and Chairman of the Health and Safety Sign Association (HSSA). Jim has over 25 years experience in researching, contributing and participating in task groups on the subject of Safety Wayguidance Systems (SWGS) for marine, industrial and high rise building application.

You can rely on
Dr Sthamer – Hamburg
For all your foam needs
AFFF, AR-AFFF
Training Foams
Fluorine Free Foam

FOAM
FIGHTS
FIRE

Proven Reliability.

24/7 Emergency Supplies
From Stock

Synthetic Foams

- Moussol APS
- Moussol FF
- Sthamax AFFF
- Sthamax
- Sthamax class A

Protein Foams

- Fluor-Foamousse
- Foamousse FFFP
- Foamousse OMEGA
- Foamousse

Ready To Use Foams

- Fettex
- Mousseal-C
- Mousseal-CF
- Mousseal-ATC

Training Foams

**24/7
EMERGENCY
SUPPLIES**
+49 40 736 16 80

We offer a comprehensive range of high performance and environmentally friendly foams.

Dr. STHAMER HAMBURG

Head Office and Factory Hamburg
Lindgäßchen 5, D-20113 Hamburg
Phone: +49 40 736 16 80
Telex: +49 40 736 16 80
E-Mail: info@sthamer.com www.sthamer.com

International Sales Contact
Mr. J. K. K. K. K.
Phone: +41 06 7185 10170
E-Mail: j.k.k.k.k@sthamer.com

Fire extinguis



A fire in an industrial enterprise can have incalculable consequences: the economic damage can bring the company to the brink, environmental damages, caused by the fire, present a high liability risk. Therefore it is of existential significance for the companies to detect the manifold risks early, to assess them correctly and to take the necessary measures.

By Dr. Wolfram Krause,

Nils Falter

and

Anna Maria Mrcela

Economic and health burden by a fire

Several surveys in Germany achieved the same result independently: after a blaze 43% of the concerned companies did not start business again and had to declare bankruptcy. The remaining companies forfeit their reliability and lost customers and market shares. And after only three years further 28% of the companies disappeared also from the market. In other words: Three quarters of the companies concerned by a blaze did not survive such a disaster.

In case of a residential building fire 17,000 environmental toxins are released. The environmental pollution can be much greater in case of fire in industrial plants. High smoke emissions with burden of the residents, release of toxic gases, contamination of water by emerging chemicals with risk for the drinking water supply, contamination of the soil: consequences, which occur in case of blazes in industrial plants.

Recognise and assess dangers in time

In view of the immense economic and environmental liability risks the persons responsible develop a greater problem awareness of the meaning of the safety and fire protection. Particularly small industrial enterprises require a clearly defined risk-management-policy. But this often lacks in operational everyday life. Basis of a risk management system is the proper analysis of the risks, the company is subject to. In a first step all potential threads are compiled. Subsequently these possible damaging events are evaluated concerning the

frequency and seriousness, with which they can affect the company. On the basis of this analysis appropriate measures must be taken for their coping.

Most frequent causes of fire

Arson, open fires, lightning, electricity and human error are counted among the most frequent causes of fire. For example a fire in hospitals arises often by unattended candles (advent wreath). The staff is called to the invalids or to an assignment and leaves the burning candles unattended. Also smoking belongs to the most frequent causes for fire and explosion damages. Smoking as well as use of fire and open lighting is forbidden in rooms and areas which are at risk of fire and explosion. Rooms and areas are considered as fire-endangered in which highly inflammable materials exist in dangerous quantity, e.g. production and storage areas with flammable materials. Rooms and areas are considered as explosion-endangered, in which gases, vapors or dusts, which form explosive composites with atmospheric oxygen in dangerous quantity, e. g. stores with flammable gases and liquids, paint shops, rooms with flammable dusts. The disregard of ban on smoking resp. its toleration can have in case of emergency not only civil and criminal law consequences, but also cause the loss of the coverage for the company.

The solution: Fire extinguishers

Fires do not normally arise self. They are mainly caused by human activity and refrain. They can be

For further details, contact:
**Minimax Mobile Services
 GmbH & Co. KG**
 Minimaxstr. 1
 D-72574 Bad Urach
 Tel: +49 (0)7125 154-229
 Fax: +49 (0)7125 154-166
 Email:
 exportmobile@minimax.de
 Websites:
 www.minimax.de
 www.minimax-mobile.com

hers

avoided by human care. Who knows a lot about the possibilities of fire fighting, helps to reduce or avoid damages. The earlier a fire is detected, the more effective it can be fought and the lower the damages are. Ideally an existing fire detector releases alarm and thereby initiate measures for fire fighting, the warning of persons in a building and, for property and personal protection, it alerts responsible security staff or the fire brigade. If a fire arises, a fire extinguisher is suitable for immediate use for fighting minor fires and initial fires. It contains extinguishing agent, which is emitted by pressure, stored or produced at taking into operation. Portable fire extinguishers are regulated in Europe by the European Standard EN 3. Fire extinguishers must be type tested and certified. The red painting of the device serves for easy finding in case of fire.

A survey of the German Fire Protection Manufacturers Association "bvfa" in the year 2006 has shown: 82% of the fires in companies could be extinguished already before arrival of the fire brigade with the fire extinguishers, which are at disposal in the company.

In Germany it is legally prescribed to have fire extinguishers at disposal in the company. The quantity of the fire extinguishers to be provided depends on the type and size of the company.

Behaviour in case of fire

For the effectiveness of rescue and fire fighting measures the correct Behaviour of the persons affected is of major significance. Everyone should know about the use of extinguishers and what to do and how to behave in dangerous situations.

An effective fire protection by selection of the right partner

An effective fire protection can only be achieved by an overall plan which is adapted to the individual requirements – so called holistic fire protection concept. All necessary single measures for fire fighting must be combined optimal. Thereby the following shall be achieved: the guarantee of the personal protection and consideration of the environmental protection acc. to the legal prescriptions especially for companies and the maintenance of the manufacturing and supply capability as well as the securing material assets.

As an fire extinguisher producer with the highest rate of vertical integration, Minimax Mobile Services GmbH & Co. KG stands for reliable operability, longevity, sophisticated technical designs and top 'Made in Germany' quality.

Through automated production processes and high-quality technical standards, we are able to meet all of our clients' financial requirements.

In addition to tried and tested fire extinguishing advantages, such as:

- A single-lever fitting for uniform operation of all device types
- standard stand pins for secure positioning whilst preventing corrosion on the bottom of the container.

- thermoset inner layer for wet extinguishers to guarantee excellent protection against corrosion inside the container.
- specially layered CO₂ propellant gas cartridges to guarantee the permanent operability of wet extinguishers
- A CO₂ overcharge for foam extinguishers for even extinguishing agent spreading during the whole operation.

Manufacturers should also be committed to innovation with new generations of fire extinguishers setting up new standards:

More powerful than ever

The increased capacity of a new generation is a real attention grabber. Improved extinguishing solution formulas and carefully aligned device configuration ensure excellent extinguishing power.

More user friendly

Revised operating instructions simplify extinguisher handling through the use of more symbols and less text. As a result of this, even untrained users can safely operate the extinguisher in the event of a fire. The colour-highlighted operating elements lock, compression lever and hose handle ensure safe handling in the event of a fire.

More multi-faceted

Product ranges should be expanded to include newly-developed housing made of impact-resistance high-performance plastic with tried and tested single lever operation. The advantage of this material is a weight reduction of up to one kilogram in comparison with other housing versions.

More environmentally friendly

The use of high-performance extinguishing solutions which are completely harmless to both animals and humans, for safe extinguishing with no sustained risks for the environment should be an obligation.

Finally we should also look to design extinguishers creating aesthetic accents.

For special applications, fire extinguishers don't have to be red, that shows a special design edition: Fire extinguishers with motives designed individually according to customers preferences ensure an original way of combining safety and style in tastefully arranged objects.

Thanks to the versatile and sophisticated air-brush technique, creativity has no limits. There is the possibility to select from numerous suggested motives. In addition you can create your own design and have it artistically rendered or you show your company logos, crests or emblems. The shiny and hand-polished chrome extinguishers are already considered classics among the design series; through their timeless elegance.

In the 21st Century those new generations of fire extinguishers will save life, and combine environmental aspects while protecting your properties. **IFP**



MINIMAX

Minimax is one of Europe's leading suppliers of fire extinguishing systems.

Powder-based systems are installed on fire engines, ships and other vehicles. They are the heart of these units and are used as mobile fire extinguishers for example on airports, in the oil industry and in situations where the use of water-based solutions is not safe.

Whether fire extinguishing systems or body components are concerned: Minimax provides a varied program for fire extinguishing and emergency vehicles.

Customized solutions are one of our strengths and advantages:

- Single powder units from 50 to 3000 kg
- Twin units up to 6000 kg
- Permanent and high pressure technology
- CO₂ units from 60 to 480 kg
- Individual configurations

Thanks to our experience we have sold more than several thousands of systems worldwide and became the specialists for powder and CO₂ extinguishing systems.

Minimax Mobile Services GmbH & Co. KG
Minimaxstr. 1 · D-72574 Bad Urach · GERMANY
Telephone +49 (0) 7154 154-133
Telefax +49 (0) 7154 154-166
FunkR@minimax.de · www.minimax.de

A voice from above....

The new **7-message** Mini Fire-Cryer® Plus from VimpeX.

Fire-Cryer® Voice Sounders have always been both **heard and understood**.

Now VimpeX are making another clear and **unambiguous** statement from above!

This 90dBA ultra-slim base sounder is designed for **ceiling mounting** with industry standard detectors, making the perfect voice sounder/detector combination. With 7 selectable messages, the Mini Fire-Cryer® Plus enables a fire alarm system to signal much more than just fire.

Using just 2 wires, Fire-Cryer® Plus is 100% synchronised and is the only product to offer **five fully compatible** models - **wall** or **base** mounted, **open area**, **industrial** and even **animal friendly** units.



FIRE CRYER® PLUS

Fire ■ Bomb Alert ■ Coded Messages ■ Terrorist Attack
Public Warning ■ System Test ■ Phased Evacuation

VIMPEX
Shaping Alarm Technology

www.vimpex.co.uk

Tel: +44 (0) 1702 216 999
Fax: +44 (0) 1702 216 699
E-mail: sales@vimpex.co.uk

Highcross leisure and retail centre, Leicester



Shopping for the Right Cable Solution



By Mark Froggatt

Marketing Services
Manager, Draka UK

Serious shopping centre or shopping mall fires are infrequent, thanks to the strenuous efforts that go into ensuring fire safety. However, as Mark Froggatt explains, many of their often complex fire safety systems are totally dependent on the performance and reliability of the cabling.

The reality for the vast majority of fire safety systems, and particularly for fire detection and alarm systems, is that no matter how sophisticated they are, if the cable used in the installation fails, the equipment is invariably rendered useless. While this is a serious consideration for every type of building, in a shopping centre it has the very real potential for the consequences to be of catastrophic proportions, even though these buildings are recognised as being among the safest and generally best managed and maintained.

Part of the problem is that, increasingly, shopping centres are getting larger and many are complex multi-use, multi-occupancy buildings incorporating

commercial offices, leisure centres, underground car parks, hotels and apartments. This, and the fact that many of the individual retail units have their own fire detection and alarm provisions, means that many shopping centre fire safety installations are extremely complex. However, human factors also have to be taken into account, as they can have an equally significant impact on evacuation time and, hence the need for fire safety systems to remain in operation for extended periods should a fire occur.

The shopping public's behaviour is, at times, irrational or even bizarre. When automatic fire detection triggers an alarm, their response is often anything but automatic. Time is often squandered

Westfield Shopping
Centre, London



in non-evacuation activities; a phase known to fire engineers as “pre-movement time”, during which shoppers are trying to figure out what is happening and what, if anything, they should do. Even when they do decide to evacuate, they may not make an immediate start even though they may be in mortal danger.

If this sounds somewhat far-fetched, there is plenty of hard evidence. For example – and it is just one of many documented instances – a fire following an explosion in an electricity sub-station at the Broadway shopping centre in Sydney, Australia

circuit integrity alarm cable was chosen for the new Highcross leisure and retail centre in Leicester in the UK. 70,000 metres of the cable, installed in two phases, powers the fully-networked fire detection and alarm system and the public address system that covers all of the centre’s public areas.

The development links directly to the adjacent Shires shopping centre and adds 110,000 square metres of retail space to the city of Leicester, making it equal in size to the internationally renowned Bullring shopping complex in nearby Birmingham. It incorporates three major department stores and a

There is no reason to suppose that the public’s affection for the convenience offered by shopping centres is going to decline, or that they are likely to reduce in size or fire safety complexity.

turned into what the local newspaper referred to as “a comedy of errors”. Apparently, disgruntled customers were decidedly reluctant to stop shopping to evacuate the complex and, when they finally condescended, the centre’s car park operator slowed down evacuation by insisting that parking tickets were handed in at the exit to the car park.

So, ensuring that the cabling will maintain its operational integrity while this incomprehensible behaviour is going on is vitally important, because countless lives may be at risk.

Fortunately, such cable is readily available. For example, Draka’s Firetufplus OHLS halogen-free

spectacular covered mall with 120 leading-brand stores. 125,000 visitors experienced the venue’s opening day, highlighting the scale of the fire safety challenges faced by every leisure and retail venue.

The decision to specify the Draka cable was taken because of its proven ability to maintain the essential circuit integrity when exposed to fire, and continue to provide power to the fire detection and public address systems. Firetufplus meets the Enhanced category of BS 5839-1:2002+A2:2008 (*Fire detection and fire alarm systems for buildings. Code of practice for system design, installation, commissioning and maintenance*), and is

manufactured to BS 7629-1:1997 (*Specification for 300/500 V fire resistant electric cables having low emission of smoke and corrosive gases when affected by fire. Multicore cables*).

The cable is also halogen-free, which means that it does not emit halogen gases and burns without producing large amounts of dense smoke. By comparison, under fire conditions, the standard PVC cables used widely in the construction industry emit hydrogen chloride gas, which has a suffocating odour that is detectable in even very low concentrations.

Equally important, like all Draka cables, Firetufplus is tested and third-party approved by LPCB (Loss Prevention Certification Board) and BASEC (British Approvals Service for Cables). These third-party approvals provide the installation contractor and Highcross' management with a truly meaningful guarantee that the cable is to the standard claimed for it. It provides 60 minutes fire and mechanical protection, followed by 60 minutes of fire, mechanical impact and water protection.

From the contractor's viewpoint, Firetufplus also offered several on-site benefits, as it retains the ease of installation associated with a pliable cable. These include: lower termination costs; availability in long lengths; and twisted core construction to improve signal clarity. Its selection also called for no special tools or training.

However, this level of enhanced circuit integrity fire performance needs to be surpassed in certain buildings that call for a cable that satisfies the more demanding requirements of BS 7346-6:2005 (*Components for smoke and heat control systems: specifications for cable systems*). These are buildings that, in England and Wales, are affected by Approved Document B (Fire safety) 2006 of the Building Regulations that came into force in 2007.

This specifies the fire performance requirements of various types of fire-rated cables for maintaining circuit integrity to protect people – both building occupants and fire and rescue personnel – and safeguard property and the environment in large or complex buildings. This is to ensure that there is a robust power supply in any building where life safety is dependant upon the reliable operation of active fire precautions or electrically-operated passive measures. This includes buildings with sophisticated fire detection and alarm systems; smoke venting systems; electrically-operated fire doors and smoke curtains; firefighting lifts; pressurisation and depressurisation fans; motor-driven smoke control dampers; and pumps for sprinkler systems and wet-risers.

Referring back to the earlier comments on the growing number of multi-use, multi-occupancy venues and their often complex evacuation challenges, this must surely apply to any number of shopping centres, and particularly those



Highcross leisure and retail centre, Leicester

designed on fire engineering principles.

Again, a solution is available. Firetuf Powerplus – a 600/1000V SWA (Steel Wired Armoured) power cable – incorporates high-performance materials to achieve the maximum 120-minute rating when subjected to the integrated testing of BS 8491: 2008 (*Method for assessment of fire integrity of large diameter power cables for use as components for smoke and heat control systems and certain other active fire safety systems*). This demanding integrated testing regime involves flame irradiation exposure, direct impact and high-pressure water spray testing.

There is no reason to suppose that the public's affection for the convenience offered by shopping centres is going to decline, or that they are likely to reduce in size or fire safety complexity. The current record holder is believed to be the Berjaya Times Square in Kuala Lumpur, Malaysia. At 700,000 square metres it is just short of 100 times larger than the pitch at the new Wembley Stadium in London, England and incorporates 700 specialty retail shops, 1,200 luxury service suites and 45 food outlets.

No doubt there is already a developer or architect pouring over the plans to nudge this into second place. If so, it will almost certainly have its fire safety determined using fire engineering principles that will rely on sophisticated detection and suppression technology. And that means some careful shopping for the right cable.

IFP

Mark Froggatt is Marketing Services Manager at Derby-based Draka UK. He can be reached on +44 (0) 1332 345431 or via email at cableuk@draka.com. The company's website can be found at www.drakauk.com

Cost Effective Gas



Given the life threatening nature of many of the hazards involved, saving money is probably not the first consideration when installing a fixed gas detection system. As recent times have highlighted, however, it is a very important aspect.

By Steve Robinson

Business Development Manager, Draeger Fire and Gas Detection Systems, Draeger Safety UK Limited

By placing transmitters and detectors in the right location and using the latest technology with new long life sensors, modern systems can be designed and installed more economically than ever before. As an added bonus, they can also significantly reduce maintenance costs.

The requirements for different gas detection systems can vary dramatically from industry to industry in accordance with the changing environments and the substances found. Whilst some systems are designed to eliminate the risks to health in areas containing toxic substances, others are used to detect combustible gas leaks and prevent fire and explosions.

Whatever the industry, gas detection systems should be designed to meet the exact requirements of an application, whether ensuring an intrinsically safe place of work or providing a totally failsafe environment. The following applications highlight a few of ways in which gas detection systems can be used to solve particular industrial problems.

Food and beverage industry

One of the major raw materials found at both the beginning and the end of the food and beverage production line is water. To be safe and acceptable to the consumer, water has to be treated and all

pipes and vessels have to be cleaned regularly with sterilising fluids. The quality of this sterilisation has gained considerable significance over recent years because of the need for (a) a pleasant taste and (b) a lack of odour. Similarly, containers that come into contact with food as well as processed raw materials, like water, have to be sterilised or disinfected. Gases such as ozone, chlorine and chlorine dioxide can all be used to achieve these effects.

As part of the process a number of workplace hazards can be produced. Sterilisation can create toxic gases and, as part of the carbonation and fermentation process, carbon dioxide has to be handled in high concentrations. Chlorine is often stored in cylinders and chlorine dioxide can be chemically generated on site. The need for controlled temperature and environmental conditions means that refrigeration and cooling systems are widely used. Cooling fluids such as ammonia, hydrocarbons or halogenated hydrocarbons are circulated under pressure in the cooling system and can leak, posing a further danger to workers.

As an example, a small leak of the irritant gas ammonia can lead to ill health effects and damage or destroy stored goods. By using a combination of Draeger Polytron transmitters with long life NH_3 electrochemical sensors capable of monitoring ranges of up to 1000 ppm, fixed gas detection

Detection

systems can provide an ideal solution. Sensors should be located near the control or piping end of evaporators and valve stations and should certainly not be mounted at the front, back or on top of evaporators.

However, unless the sensors feature a glass-reinforced plastic or stainless steel construction and have heated optics to reduce the effects of humidity, they should be kept out of direct airflow from and to the evaporator and away from any moisture created during defrost. Likewise, they should not be installed over doors in refrigerated areas or the sensor will become a chunk of ice. In compressor rooms, because ammonia is lighter than air and will rise first, the transmitter should be installed at ceiling height.

Conversely, carbon dioxide is heavier than air and will collect in poorly ventilated areas or confined spaces, displacing oxygen with low-level clouds. Odourless and colourless, it is a natural bi-product of the malting, fermentation and storage processes in breweries and wineries. It can also be used in the carbonation of soft drinks and mineral water in the beverage industry. In this instance, infrared transmitters such as the Polytron IR CO₂ can monitor concentrations and alert personnel or even switch on fans. Transmitters should be mounted at low levels and be protected from mechanical damage and against water ingress if they are washed down occasionally.

Refineries

An oil refinery is an organised and co-ordinated arrangement of manufacturing processes designed to produce physical and chemical changes in crude oil and to convert it into everyday products such as petrol, diesel, lubricating oil, fuel oil and bitumen. Virtually every process results in the creation of dangerous gases.

Explosive hazards will need to be monitored around non-hermetic compressors and pumps and at LPG storage and filling sites. Toxic and explosive hazards might be found around flanges, whereas hydrogen sulphide could be a problem in desulphurisation plants, and chlorine could pose a threat in water treatment areas. Dangerous gases can also occur in "odd" areas where leaks have been channelled by wind direction or by gravity where substances such as LPG, which moves like water, find their way into trenches.

Gases obviously need to be detected before they reach sensitive locations such as nearby living quarters or roads, the air intake of a control room, the power plant, and hot spots such as hydrocrackers and ovens.

A number of gas detection options exist for different applications. Perfect for fence-line detection and coverage of larger areas, for example, the Draeger Polytron Pulsar Open Path gas detector is able to detect hydrocarbon leaks within a line of sight of up to 200m. Eliminating the need for a vapour calibration, the Polytron IR can be calibrated with one common gas such as propane and, during normal operation, several target gases can be selected from the internal gas library without requiring re-calibration. IR sensors can also be



used to provide low measuring ranges in leak detection applications. Catalytic bead sensors such as the Polytron Ex are ideal to protect against hydrogen and are available in a HT version for high temperature applications above 65°C. For hydrofluoric acid and hydrogen sulphide, universal transmitters such as the Polytron 3000 or 7000 will accept any Draeger sensor and allow sensor-specific information to be downloaded from the embedded sensor EEPROM.

Solvent storage

One way to save money in a solvent storage area is to install a gas detection system. An accidental spill of flammable liquid substances can lead to a potentially explosive mixture. A ventilation system giving a continuous five-fold air exchange (five times the storage volume per hour) can prevent such a hazard but, over time, can prove to be very expensive, particularly in light of the fact that spills of this kind are extremely rare. A simple, cost efficient solution is to install a gas detection system which allows the ventilation to be kept at low speed for most of the time (i.e. one fold air-exchange) and which only switches the ventilation to five-fold if the gas detection system detects increasing or hazardous concentrations of flammable vapours.

Solvent storage monitoring requires area monitoring, covering a given space rather than having a sensor close to the point of every potential leak. Catalytic bead detectors are suitable for monitoring an area of approximately 75m² but, when using IR detectors (which allow lower measuring ranges and, therefore, lower alarm thresholds), the monitored area can be increased to 200m².



As all flammable vapours are heavier than air, the detectors should be placed very close to the floor but still be accessible for calibration and maintenance. Calibration has to be performed for the substance to which the installed detector is least sensitive. Once again, IR detectors offer more capabilities than the catalytic bead variety.

In most cases, an n-Nonane or Toluene calibration is recommended for catalytic bead sensors. A cross-calibration using Propane or n-Butane and a factor of 2.3 and 2.0 respectively can be made if the stored chemicals are not comprehensively

mode. The second alarm threshold (at 30 or 40% LEL) could be used to switch off power to the storage facility and to warn the operator.

Sensors saving money

Fast response, stable signals, good measurement performance, low drift, long extended lifetime, extended temperature ranges, poison resistance and wide measuring ranges form just part of the sensor selection criteria.

Where the detection of toxic gases or oxygen depletion are concerned, traditional small and

Solvent storage monitoring requires area monitoring, covering a given space rather than having a sensor close to the point of every potential leak. Catalytic bead detectors are suitable for monitoring an area of approximately 75m² but, when using IR detectors (which allow lower measuring ranges and, therefore, lower alarm thresholds), the monitored area can be increased to 200m².

specified. Greater scope is available with newer sensors such as the Draeger Polytron IR Ex. Used to detect a wide range of flammable liquids when calibrated for methane or acetone, it is relatively sensitive and, therefore, can reliably monitor vapours such as alcohols, ethers, cyclo and glycol-ethers, alkanes and alkyl compounds as well as ketones, esters, fuel hydrocarbons, alkyl benzenes (xylene and toluene) and amines. In this instance, the first alarm threshold (e.g. 5 or 10% LEL and requiring no operator acknowledgement) could be used to switch the ventilation fans into high speed

mass produced electrochemical sensors have been eclipsed by larger, intelligent sensors. These types of sensor are able to communicate with the transmitter and feature an EPROM memory which stores calibration information as well as gas data, such as target gas and range. Incorporating temperature and pressure compensation, this built-in intelligence not only leads to higher accuracy but it also extends calibration intervals to just once a year. In addition, they offer improved longevity which, in turn, means that fewer replacement sensors are required. As a result, the lifetime costs

of the system are significantly reduced. Available with a variety of mounting capabilities, they also offer better flexibility in terms of selectable response times and ppb (parts per billion) test rates.

These sensors are also easy to use. As the gas is stored within the sensor itself and the sensors arrive pre-calibrated from the manufacturer, they no longer have to be calibrated in the transmitter. Furthermore, the plug-in construction offers true "plug-and-play" functionality and, once installed in the transmitter, the EPROM will communicate with the transmitter without further intervention or calibration by the operator.

Better manufacturing techniques and advances in technology have also improved the detection of flammable gases and vapours with traditional pellistor or catalytic bead detectors being replaced by superior technologies such as infra red (IR). Even in the harshest of conditions, the new DraegerSensor IR, for example, is easy to install – simply unscrew the pellistor and screw in the IR. The inclusion of a Wheatstone Bridge, which is able to duplicate a standard pellistor output, also means that existing cables and control devices from most manufacturers can still be used.

IR technology is also more robust and stable and is immune to poisons such as H₂S, for example. As a further benefit, the increased accuracy of IR is able to reduce maintenance and calibration intervals. Instead of the need for six-monthly or, in some cases, the more frequent calibration intervals required by catalytic devices, IR systems can extend calibration intervals to one year. Together with an overall life expectancy of more than 15 years, this technology dramatically reduces lifetime ownership costs.



Cabling can also be a consideration and the use of open path IR technology, where a multiple infra red beam is transmitted over a distance of up to 200m to a separate receiver can have specific advantages. Where large areas need to be covered in perimeter monitoring, for instance, IR sensors can significantly reduce cabling costs.

Draeger Fire and Gas Detection Systems offers products, services and system solutions for all encompassing toxic, flammable and oxygen detection, flame detection and design, build, commission and maintenance of fire and gas detection systems for protection of personnel and assets.

IFP



Further information is available from:
Marion Mackenzie
Draeger Safety UK Limited
Ullswater Close
Blyth Riverside Business Park
Blyth
Northumberland NE24 4RG
Tel: 01670 561413
Fax: 01670 544475

sensitron
GAS EVOLUTION
SAFETY AND SECURITY FOR A BETTER LIFE

SMART PARK SYSTEM

EN STANDARD & ONE MAN CALIBRATION
GAS DETECTION



MULTISCAN++

SMART 3P & SMART REPLACEABLE SENSORS HEAD

SMART 3P

SINGLE TECH:
CO • NO₂ • NO • HC

DUAL TECH:
CO • NO₂

SENTOX IDE

sensitron
GAS EVOLUTION
SAFETY AND SECURITY FOR A BETTER LIFE

SMART 3G & (LISA) IR

ATEX & ONE MAN CALIBRATION
GAS DETECTORS



ME 1 (525-3)
ATMOSPHERIC GAS DETECTOR
ATEX
EXTRINSIC

WITH IR TECHNOLOGY
AT THE PELLISTOR PRICE



sensitron
GAS EVOLUTION
SAFETY AND SECURITY FOR A BETTER LIFE

A YOUNG COMPANY WITH GREAT IDEAS
SENSITRON s.r.l. 20010 CORNAREDO (MI) - V.LE DELLA REPUBBLICA, 48 - ITALY - TEL. ++39 02.93548155 - FAX ++39 02.93548089
<http://www.sensitron.it> - e-mail: sales@sensitron.it - SOLE DISTRIBUTORS WORLDWIDE; OEM PRODUCTION AVAILABLE

FM-200®
WATER MIST
CO₂
FOAM
ALARM/DETECTION
AIR SAMPLING



JANUS
FIRE SYSTEMS™

EXPERIENCED
MANUFACTURER.
CUSTOMER FOCUSED.

YOUR GATEWAY TO A NEW KIND OF SERVICE

+1.219.663.1600
www.janusfiresystems.com
1102 Rupcich Drive
Crown Point, IN 46307 U.S.A.

FM-200® is a registered trademark of E.I. du Pont de Nemours and Company.

Fike FM-200 system protects engineering firm's computer room facility



Selection Considerations for Clean Agent Fire Suppression Systems

By Kevin Kenny

Fike Global Product Manager

Basic fire protection systems, such as fire sprinklers, provide personal and structural protection. But when it comes to high-value assets, water can be just as damaging as fire and smoke.

Clean agent fire suppression systems are superior to simple water systems because they extinguish a fire faster (and more efficiently) than water, require no clean-up and prevent smoke and soot damage. Clean agents extinguish fire as a gas that permeates into cabinets, wire-laden ceilings and subfloors and other obstructed areas (where water cannot reach). Clean agents are uniquely suited to protect electronics hidden within equipment and enclosures, where fires are likely to start. By flooding an area with a gaseous fire fighting agent, even obscured or hard-to-reach fires are quickly extinguished, usually long before they are seen.

History

For more than 30 years, Halon 1301 and Halon 1211 were the preferred fire extinguishing systems for many high value asset and electronic applications, as well as for irreplaceable artifacts that might be damaged by water-based systems. However, in 1994, the Montreal Protocol severely limited, and eventually halted the production of halons due to their implication in the destruction of stratospheric ozone.

Prior to this phase-out, an industry-wide effort was undertaken to discover alternative fire extinguishing agents. The ideal solution was to find the agents that performed like Halon, but with zero

Fike's ProInert inert gas system with patented self-regulating valve



ODP (Ozone Depleting Potential) and low GWP (Global Warming Potential). As a result of this effort, a number of Halon alternatives have been introduced to the market since the early 1990's. Today, the primary choices for clean agent fire suppression are:

- Hydrofluorocarbons or HFCs. (Dupont™ FM-200™ and FE-25™ are two of the most commonly known HFC agents)
- Perfluorinated ketones or PFCs (such as 3M's Novec™ 1230)
- Inert gases (usually a blend of argon and nitrogen)

There are over 300,000 fire suppressions systems in the world using FM-200 agent, making it the clear leader. FM-200 has a long track record of success and is well known by fire professionals globally. FE-25 systems (known by the brand name ECARO-25®) have grown in popularity since its commercial introduction in 2004, mainly due to the fact that it is the most economical Halon replacement option. Novec 1230 systems, another relative newcomer to fire suppression, have found success in projects desiring low GWP. Inert gas systems are popular in Europe and other regions that demand the absolute minimal environmental impact.

All these agents have shown to suppress fires, and are much more effective than basic water systems in high-value protected spaces. However, there are other factors that should be considered when evaluating which system is the best for a particular application.

1. Performance

HFCs and PFCs extinguish fires by lowering the temperature below what is required for the combustion process to occur and/or chemically

interfering with that process. Inert gases extinguish fires by reducing the oxygen concentration level in the protected space to a point that a fire cannot be sustained, yet is still safe for human occupation. While both methods are effective, the heat reduction/removal method is much faster and requires less extinguishing agent percent per volume.

Though many inert gas systems are more efficient in hold time (the amount of time a clean agent must remain in a protected space to extinguish the fire), than HFCs, HFCs are typically more efficient than PFCs. More specifically, FE-25 is 15% more efficient in hold time than FM-200 and 25% more efficient in hold time than Novec 1230.

2. Cost

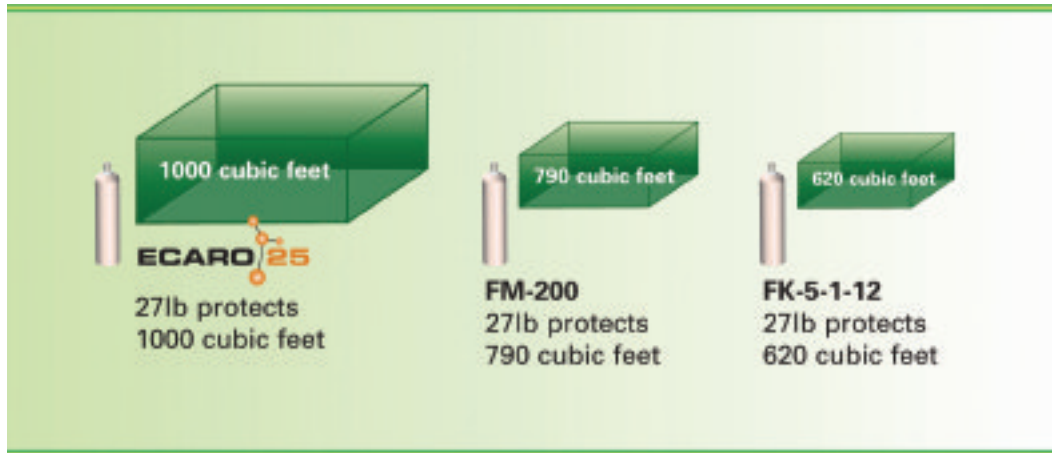
In today's economic climate, cost-effectiveness is a vital consideration. Fortunately, clean agent systems can be designed to meet the budget requirements, and still provide a significantly more effective method of protection versus sprinklers. Halogenated systems are typically the least expensive in terms of initial cost. PFC systems are more expensive, and inert gas systems are usually the most expensive in initial costs. For example, systems using FE-25 can be up to 38% less than comparable Novec 1230 systems. As stated above, FE-25 is an excellent choice for applications that need the protection of a clean agent, but want the most economical solution. FE-25 systems are also well suited for Halon replacement projects because many times an existing Halon piping network can be used, providing substantial savings versus other systems.

Inert gas systems are usually the highest initial cost due to the number of containers required versus HFCs and PFCs. However, many building owners are looking more carefully at the "life-time" costs of a suppression system, including expenses for maintenance, refills, and testing over many years. Because inert gas systems are extremely inexpensive and easy to re-fill, they are potentially the most cost-effective solution over the usable lifetime. Additionally, inert gas systems using selector valve technology can be very cost effective in large and/or multiple area applications, since one centralized inert gas system can be used to protect several different risk areas.

3. Environmental factors

Environmental considerations are increasingly important to building owners around the world. All clean agent fire suppression systems on the market are considered "green" due to having zero ODP. But some projects may require a system with the least amount of environmental impact. When this is the case, inert gas systems (using argon and nitrogen) are typically the preferred choice because they are the only systems with zero GWP. Some inert systems include a small amount of carbon dioxide in the agent blend, so that should be considered when evaluating inert systems from different manufacturers. A PFC system such as Novec 1230 can also be a consideration for environmentally-driven projects due to its very low GWP. Hydrofluorocarbons have a higher GWP than inert gases or PFCs, although still well below the GWP of Halon.

Recently, there has been much discussion globally about the use of HFCs in all types of



applications, most notably in refrigeration. Some countries are beginning to evaluate HFC usage in light of its environmental impact. In most areas around the world, HFCs are commonly used in fire suppression, and there is no indication that this will change in the foreseeable future, even if HFC usage is reduced in other applications such as refrigeration. Despite all the speculation and (often incorrect) predictions for the future of HFC products, building owners should seek the facts about HFCs for fire protection, and make educated decisions based on those facts.

4. Footprint

Footprint, or the amount of room actually devoted to the fire suppression system, can be an important factor in applications where space is limited. Due to the necessity for high pressurization, inert gas systems usually require a large number of tanks for a typical space. This may limit the use of inert gas systems in applications with limited space, such as offshore oil platforms, Halon replacement projects, protected spaces within a multi-tenant building, or smaller urban buildings. When there is limited space for clean agent containers, FM-200, FE-25, or Novec 1230 are often the appropriate choice.

It should again be noted that inert gas systems have the important distinction of being able to locate the storage containers far away (up to 61m) from the protected areas. So even if there is limited space for containers within the protected area, these systems can still be viable if there is available space in another part of the facility, such as a storage room or garage.

5. Halon replacement

Internationally, the production of Halon has ceased, but the replacement protocol of old Halon systems varies greatly. In addition to the almost worldwide production ban on Halon 1301, numerous countries have taken steps to mandate the removal of these systems, including many parts of Europe and Australia. Canada has implemented a Halon 1301 phase out plan, including a halt on the refill of fixed Halon systems beginning in 2010. In addition, the only sources for this gas are recycled Halon and inventories produced prior to 1994. This limited supply continues to spur the need for replacement options, even in areas that have not banned the existence of such systems.

Of all the options, FE-25 demonstrates the

closest performance match to Halon 1301. Due to the physical similarities between gases, FE-25 systems can often use an existing Halon piping network. FM-200 and Novec 1230 systems offer a similar general footprint to Halon systems, but usually require new piping.

6. Chemical vs. natural

All the clean agent options discussed in this article are considered safe for occupied spaces. For some building owners, the decision of which product to use comes down to a chemical (“man-made”) solution versus a more naturally occurring solution. Chemical clean agents have definite benefits, including speed, footprint, and cost. Inert gases have the benefit of being an absolutely green solution, without any concern of releasing chemicals into the atmosphere. Some users may be concerned about the concept of oxygen reduction employed by inert gas systems in occupied spaces. An inert system reduces the oxygen level to approximately 12% by volume – a level that will not support a combustion reaction (thus extinguishing the fire), but is perfectly safe for human exposure over a short period of time.

Because all the current agents are safe, the issue of chemical versus natural is not about performance, but preference. Fortunately, many manufacturers of clean agent suppression systems offer both types of systems, so the end user has plenty of options to meet their protection and budget needs.

Summary

The world is increasing its reliance on sophisticated electronics, telecommunications, data centers, advanced medical technologies, and many other types of specialized equipment. Protecting these unique assets from fire requires more than a simple sprinkler system. It’s important to understand the differences between the various clean agent systems, in order to make well-informed decisions about which one to employ. Manufacturers will naturally try to portray their offerings in the best light possible, and may sometimes fail to provide a balanced view of all options. Simply stated, every clean agent system on the market has benefits, and every system has aspects that could be considered drawbacks. But all clean agent systems provide an advanced level of fire protection and should always be considered for high value asset areas.

**INNOVATIVE FIRE SUPPRESSION,
LEADING EDGE TECHNOLOGY,**

**AND
RETURNED
PHONE CALLS.**

**WITH FIKE, IT'S NOT JUST ABOUT PROTECTION.
IT'S ABOUT PEOPLE.**

- *Innovative, reliable clean agent fire suppression*
- *Fast, responsive service*
- *Market, codes and legislation expertise*
- *Solutions that protect your bottom line*

**THERE ARE MANY REASONS TO CHOOSE FIKE
FOR YOUR FIRE SUPPRESSION APPLICATIONS.**



Fike®

WWW.FIKE.COM

1-866-758-6004

*Pic courtesy of
Rectorseal Inc*



Firestopping – A Shared Responsibility

By Randy G. Clark

Rectorseal Corporation

Since I first got my start in firestopping more than twenty-five years ago, I have seen many changes take place within this still young industry.

The number of manufacturers having listings for firestop systems has increased more than three-fold. The model codes have gone from unclear firestopping references to specific language within a section devoted exclusively to firestopping. With these code refinements came increased enforcement by the local building officials. Architects have become much more aware of the need to provide clear and specific details of the firestop conditions needed within their building designs. Mechanical, electrical, and plumbing engineers are now automatically incorporating proper firestopping techniques, which influence the design of their individual service runs. The types of products offered were only a few, but now they include: Sealants, putties, mortars,

pillows, boards, wrap strips, devices, etc. Though there have been many changes, there seems to be one persistent question: Whose responsibility is it to do the firestopping? Before we deal with this issue, we need to review the following: What is firestopping, why do we need to firestop, and how are through penetration firestops materials tested?

One way to look at firestopping would be to say that it is a material or a combination of materials used to re-establish the fire integrity of a rated wall or floor assembly after its rating has been compromised by the inclusion or exclusion of a penetrant. To simplify, one must maintain the time rated integrity of an assembly after any alteration. As an example, when an insulated pipe is installed

*Pic courtesy of
Rectorseal Inc*



through a two hour rated gypsum wall, that pipe has destroyed the original rating of the wall. If the contractor follows a tested firestop configuration and properly installs the listed firestop materials, the original rating of the wall with its penetrant is maintained.

Why do we need to firestop? First of all, firestopping is one of the requirements of the various building codes. All major building codes have at their foundation fire codes. The integrity of a building during a fire condition must be maintained in order to have a safe evacuation of its occupants. The integrity also needs to be maintained in order to provide the firefighters their best opportunity to put out the fire. Secondly, firestopping is a matter of life safety. The lives of the firefighters as well as those of the building's occupants could very well depend on having properly firestopped penetrations. Using a product which is part of a recognized firestop system configuration will meet the requirements of the codes.

How are firestopping materials for through penetrations tested? Both the industry at large and the building and code officials recognize the established test standard ASTM E814 or UL 1479, "Fire Tests of Through-Penetration Firestops." This standard was first published in 1981 and had at its roots one of the oldest fire tests, ASTM E119, "Fire Tests of Building Construction and Materials." ASTM E814 (UL 1479) mandates that the fire endurance of the firestop system configuration be not less than that of the fire rated assembly when tested under a minimum positive pressure and to the standard time-temperature curve. After the successful passage of the fire endurance portion of the test, the entire assembly is subjected to the

erosion, impact, and cooling effects of a high pressure fireman's hose. Both the fire endurance as well as the high pressure hose portions must be successfully passed to meet the requirements of this standard.

Then whose responsibility is it to firestop? Let us examine several layers of responsibility: The architect/engineer, the local building official, the general contractor, the sub-contractor/specialty contractor, and the firestop manufacturer. It would seem that each of these entities would have a separate agenda and at times would seem to be adversarial, but when it comes to firestopping, each shares a common responsibility: Life-Safety. Let us briefly examine their responsibility and the manner in which prior planning could affect the degree of fulfillment of this responsibility.

The architect/engineer for the project is responsible for developing a concept and committing it to paper. He is also responsible for literally hundreds of building elements, not only specifying which to use, but also making sure that each will function as intended and in harmony with the others. His design and its elements must meet the local code requirements. However, the design configurations can have an impact not only on the method of firestopping, but, in turn, can have an impact on the complexity of the system and its overall cost. Let us examine some of these parameters: The selection of materials, the size of the opening, the quantity of penetrants within the opening, and the intended conditions as to which the penetrants will be subjected.

What about the selection of materials?

After the architect has established a design to match the owner's requirements, the various engineers set to work designing the specific service runs. These runs may be for electrical conduit or cables, piping for domestic water, steam or chilled water, HVAC duct work, or other services. The choice of a particular run could affect the method and materials used in firestopping and its overall cost. For example, combustible penetrants (especially various types of plastics) are usually more difficult than metallic penetrants to firestop and sometimes require the use of special collars or wraps. These collars extend beyond the diameter of the pipe, and because of their anchoring, more space is required between penetrants. In addition to complications with combustible penetrants, there are types of pipe insulation materials which are more difficult than others to firestop. Furthermore, it is important to make sure that there is sufficient annular space provided for the insulation so that an appropriate amount of the selected firestop material can be used. The annular space created will be in direct proportion to the size of hole made within the assembly and the size of the hole made can affect both the methods and materials used.

What about the size of the openings?

Having too little or too much annular space can create difficulties in properly firestopping a condition. In most cases, the size of the hole must be planned to fit not only the penetrants, but also to fit the amount of firestop material required for the condition. Large openings within a floor may present a problem if the annular spaces created exceed four inches. Since this dimension is the average width of a human foot, most specifications will require that a plate be installed or that a material which could support the same weight as the floor be used. Since larger openings generally create large annular spaces, these larger areas present a greater surface area for the fire to react against and present, therefore, more severe conditions. One should allow for the smallest amount of annular space around the penetrants, while making sure the space provided falls within the tested configuration of the selected firestop material. This optimization could ensure minimal total cost of firestopping, while still providing a configuration which should meet with the local building official's approval. Multiple penetrants can also contribute to difficulties.

How could the quantity of penetrants within an opening affect the proper firestopping of that opening? Some designers will utilize one large opening into which to place many penetrants. This would normally be done for simplicity, however, in most cases, individual openings would be more desirable. It is usually more cost effective to firestop a single penetrant in an opening rather than multiple penetrants. There are far more listings in the Underwriters Laboratories Fire Resistive Directory for single penetrants within a hole than for multiple penetrants within a hole. Placing multiple plastic pipes (especially large diameter DWV pipes) within the same opening could result in a condition for which there is no currently listed firestop system. Plastic pipes should always be run in individual holes allowing for ample space between the openings. Multiple penetrants, especially within a wall opening, can



*Pic courtesy of
Rectorseal Inc*

present a problem for the installer because of the necessity to fill the areas between the penetrants with firestopping materials. If the penetrants are too close or are too random in placement, the installer may not be able physically to place the materials into the spaces between the penetrants. This difficulty could cause great consternation and needless delays in the job. All firestop materials are expensive, and the larger opening, the greater the total cubic inches of fill material needed. Additionally, the more complex the opening, the greater the total time required to complete the installation. Since *time is money*, increased complexity contributes to an increased installed cost. The selection of materials, the size of the opening and the quantity of the penetrants all reflect on the conditions at the time of installation, but what about the day to day conditions of the penetration?



*Pic courtesy of
Rectorseal Inc*

*Pic courtesy of
Rectorseal Inc*



What about the intended conditions these configurations must endure during the life of the building? The engineers will select the appropriate service runs for the duties intended. The selection of materials will include the type and schedule of pipe, the type and size of insulation, the type and size of cables, and the size and gauge of duct. These materials have been engineered to perform within their environment and within the appropriate design limits. However, consideration must be given to the firestopping methods and materials to be used if these materials are placed within fire rated assemblies. Will the penetrants experience extreme vibration or movement? Will the penetrants experience an unusual atmosphere of high moisture, water or chemicals?

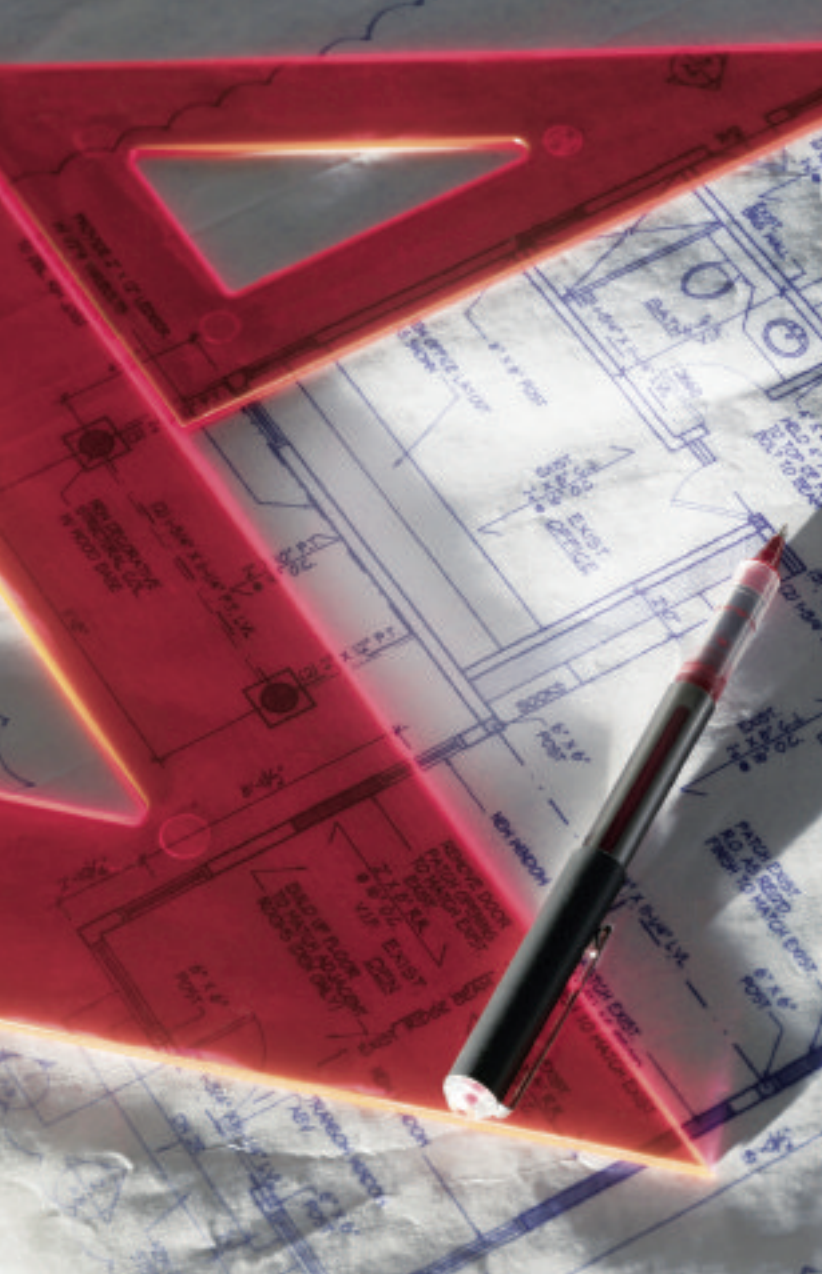
system or an engineered judgment. The general contractor is under contract with the owner to construct the project in accordance with the plans and specifications. Therefore, the general contractor has the ultimate responsibility to complete the work, even if the subcontractor (who had the original responsibility) fails to complete his individual contract. When it comes to firestopping, it is most common for the contractor making the hole to have the responsibility to fill it properly. During the last decade, there has been the growth in the number of specialty contractors (applicators) who concentrate in the application of firestop materials. These applicators will contract for the entire project or will only subcontract for the firestopping from the other trades on the job site. These

When it comes to firestopping, it is most common for the contractor making the hole to have the responsibility to fill it properly. During the last decade, there has been the growth in the number of specialty contractors (applicators) who concentrate in the application of firestop materials.

Will the penetrants be exposed to elevated temperatures? These variables could affect the selection of a proper firestop configuration. In these situations as in all unusual cases, the manufacturer should be consulted for a specific recommendation.

What about others who have responsibility for proper firestopping? The local building officials (inspectors) have the responsibility by statute to enforce the locally adopted building code requirements. The inspectors will require that the contractor furnish sufficient documentation to show that the installed firestop configuration and the products used meet with the requirements of the code for the particular assembly and penetrants. These inspectors have the ultimate responsibility to approve or disapprove any firestop system, whether it is a tested

specialty applicators will facilitate a more consistent approach to firestopping for the overall project. In fact, an increased number of specifications call for the firestopping to be done by a single contractor. Lastly, the manufacturers have the responsibility to develop and test products which will best meet the needs of a rapidly changing building industry. These products not only have to work, but should also be easy to install and be cost effective. The manufacturers also have the responsibility to furnish sufficient documentation for their products and for the configuration in which they must be installed. If there is any question about the design or use of a particular product in a specific condition, the manufacturer should be contacted. The responsibility for proper firestopping is truly a shared one. **IFP**



Wrap It Up

Specify **FyreWrap® Elite™ 1.5**

Duct Insulation, the innovative shaft alternative and fire-rated duct enclosure.

A FyreWrap® fire-rated duct insulation system lets you wrap up your project in less time at lower cost. This lightweight, flexible material minimizes labor and installation time and saves valuable building space. FyreWrap Elite 1.5 Duct Insulation offers superior fire protection and design flexibility including:

- 1- and 2- hour fire-rated duct protection
- Systems for grease, chemical fume, HVAC and life safety air ducts
- Complies with NFPA 96, ICC and IAMPO Codes
- Solutions for building design and complex jobsite configuration
- Conserves space as alternative to traditional gypsum shaft enclosures
- Thin, lightweight, flexible blanket form allows easy installation
- Utilizes high temperature biosoluble insulation

A FyreWrap product specification in several formats is available at www.arcat.com; search using keywords Unifrax, FyreWrap, or www.unifrax.com. For additional information on FyreWrap Elite 1.5 or other products, certifications, code compliance, installation instructions or drawings, contact Unifrax Corporate Headquarters USA at 716-278-3888.



www.unifrax.com

SUBSCRIPTIONS

INTERNATIONAL FIRE PROTECTION

GET YOUR SUBSCRIPTION NOW!!!



**IFP IS PUBLISHED 4 TIMES A YEAR
– FEBRUARY, MAY, AUGUST AND
NOVEMBER**

Name: _____

Company/Organisation: _____

Address: _____

Telephone: _____

Fax: _____

E-mail: _____

Start Subscription from Issue: _____

Subscription Rates: UK £50.00 Europe €60

Rest of World US \$70.00

Back Issues: US \$18.00, £10.00 or €15 each inclusive
of P&P (subject to availability)

METHODS OF PAYMENT:

Website Subscription: www.mdmpublishing.com

Cheque: _____ MDM Publishing Ltd.

Visa/Mastercard No: _____

Expiry Date: _____ Security Code: _____
(last three digits on reverse of card)

If paying by credit card please fax details. DO NOT post/mail.
Fax: +44 (0) 1935 426926

MDM Publishing Ltd.

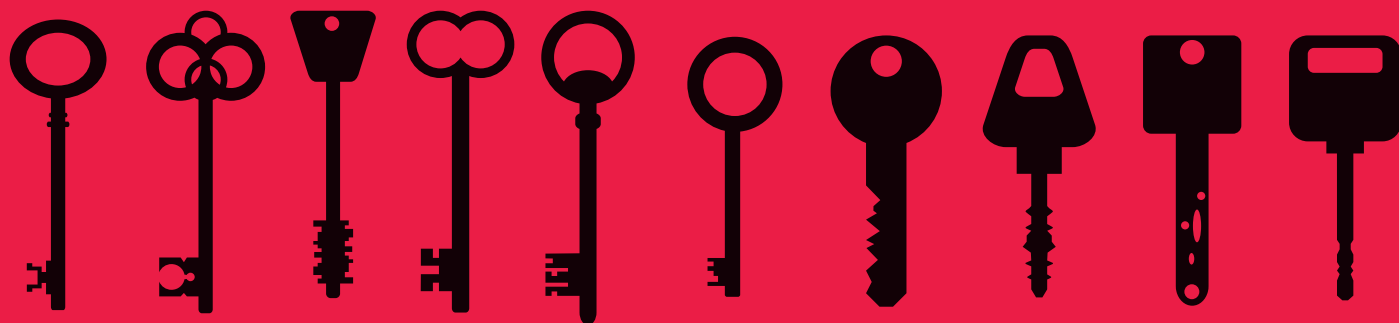
The Abbey Manor Business Centre, The Abbey, Preston Road,
Yeovil, Somerset BA20 2EN, United Kingdom

ADVERTISERS' INDEX

CGI International	13
Chemetron	OBC
C-TEC	25-29
Dafo Fomtec	IBC
Detector Electronics	5
Dr Sthamer	51
Draka	IFC
Essex Fluid Controls	37
Fike Corporation	66
Fire Fighting Enterprises	17
Firetrace International	9
Flexhead Industries	48
Gielle	43
Halon Banking Systems	41
Janus Fire Protection	62
Kentec	29
Means of Escape	50
Minimax	54
OCV Control Valves	2
Patterson Pumps	11
Pilkington	17
Pyroplex Limited	14
Reliable Fire Sprinkler	44
Securiton	25
Sensitron	62
Spectrex Inc	34
Tyco FSBP	38
Underwriters Laboratories	7
Unifrax	71
Vetrotech – Saint Gobain	19
Vimpex	54

Foam Concentrates and Foam Systems for all applications





Every industry needs a unique fire protection solution



The Key to Worldwide Protection.

Chemetron Fire Systems offers the widest range of fire protection solutions to suit your needs. Protecting your most vital assets and operations is our mission and passion. Including low pressure CO₂, water mist, Argonite™, 3M™ Novec™1230 fire protection fluid and FM-200®; our systems protect the assets most vital to you — data centers, power generation facilities, milling applications, LEED certified projects as well as other high value business systems, to name just a few.

With project management, installation and service Chemetron is the one manufacturer that can unlock the solution to all of your fire protection challenges.

Backed by *our* experience. Focused on *your* future.

With over 70 years of experience, let Chemetron provide the key to your unique challenge. Call us today at 708-748-1503 ext 411, or go to: www.chemetron.com

CHEMETRON
Fire Systems™

A UTC Fire & Security Company